

amateur radio

AUGUST, 1974

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COVER PHOTO
At the recent Youth Expo at the Moorabbin Town Hall, a member of the Moorabbin and District Radio Club shows a youthful visitor how to use a morse key.



GRID DIP METER SPECIFICATION



Model TE-15
Freq. Range: 440kHz-280MHz
in 6 Coils
A. Coil 0.44-1.34MHz
B. Coil 1.34-4.3MHz
C. Coil 4.14MHz
D. Coil 14.40MHz
F. Coil 120-280MHz
Transistor: 3 TR's & 1 Diode
Meter: 500uA Fa.
Battery: 9V (BL-909P)
Dimensions: 180x85x40mm
Weight: 730g
Price \$38.50
P & P \$1.00

DELUXE AUDIO GENERATOR SPECIFICATION

Model HE-22D Model TE-22D

Freq. Range: Sin: 20Hz-200kHz
Square: 20Hz-25kHz
Output Voltage: Sin: 7 volt
Square 7 volt
Output Impedance: 1000 ohm
Freq. Accuracy: $\pm 3\%$, $\pm 2\%$
Distortion: Less than 2%
Tube Complement: 6BM8
12 AT7, 6Z4
Power Source: 105-125, 220-
240V AC, 50/60 cps, 15W
With Attenuation Range
4 Ranges—1/1, 1/10, 1/100,
1/1K

Compact-Space Saving
Printed Circuit for uniform
Characteristics
Low Distortion
Dimensions: 140 x 215 x 170mm
Weight: 2.8kg.

Price \$49.50
P & P \$2.00

DX150B REALISTIC WITH SEPARATE SPEAKER

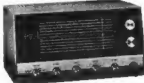


The popular REALISTIC DX150B which has gone from strength to strength with amateurs, short-wave and broadcast listeners alike, now has a further improvement, A SEPARATE MATCHING SPEAKER included.
The DX150B gives long-range, world-wide realistic reception on 4 bands, including Broadcast Fully transistorised-all solid state-no warm-up delays, the DX150B will run on dry cells if current tails or is not available, will operate from a car's cigarette lighter or any 12V DC service. A 240V AC power supply is also built in. Over 30 semiconductor-product detector for SSB/CW, plus fast and slow AVC-variable pitch BFO-illuminated electrical bandspread, fully calibrated for amateur bands-cascade RF stage-AHL for RF and AF-zener stabilised-OTL audio-illuminated "S" meter.
Price \$229.50
P & P \$2.00

NEW PRICE — \$189.00

LAFAYETTE HA-600A SOLID STATE GENERAL COVERAGE

- 5 BANDS 150-400 kHz, 550-1600 kHz (Broadcast band), 1.6-4.8 MHz, 4.8-14.6 MHz, 10.5-30 MHz
Operates from 12 Volts DC (negative ground) or 220-240 Volts 50 Hz.
- Field Effect Transistors in RF Mixer and Oscillator Stages.
 - Two Mechanical Filters for exceptional selectivity.
 - Voltage Regulated with Zener Diodes.
 - Product Detector for SSB/CW.
 - Edge Illuminated Slide Rule Dial with "S" Meter.
 - Continuous Electrical Bandspread Calibrated 60-100M Amateur Bands.
 - Variable BFO, Automatic Noise Limiter.
 - Speaker Impedance: 4 to 16 ohms.



Price \$215.00

Also available — HA800B Amateur Band 6 Bands 3.5MHz to 29.7MHz and 50-54MHz as above features with 100kHz calibration facility: \$219.00, 100kHz Xtal Extra \$18.75. P & P \$2.00

SOLID STATE WIDEBAND RF SIGNAL GENERATOR

Model SG-402

This is an all solid state, wide-band RF Signal Generator which produces low impedance low distortion RF signals. It is highly dependable and easy to operate, and is a handy working instrument for service benches and electronic equipment production centres.

- SPECIAL FEATURES:**
1. Generates wide range signals from 100kHz to 30MHz in six frequency ranges.
 2. All solid state construction for instant waveforms, compact and lightweight portability.
 3. Includes 400kHz signal source for modulation of output signal, which can be modulated by external sources.

Price \$99.50. p & p \$2.00

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Ericsson type manufactured by L. M. Ericson. As used by PMG Dept. As new condition. Dial in base. \$19.50 Tested, p&p 75c
Black Phone. Chrome Dial Standard type. Robust construction. \$7.95. Few only p&p 75c
Plastic Type. Standard PMK type. Manufactured by L. M. Ericson. As new tested. All phones fitted with standard phone plug and socket. \$17.50. p & p 75c
Double Phone Plug. 6.5mm 75c
Standard 2 Circuit Phone Plug PMG Type 30c
PMG Type Counters. 4 digit, 40 Volt operation 50c
PMG Type Telephone Plug & Socket, round type PMG Type Phone Plug & Socket, standard Ericson White Plastic 15c per pair
PMG Type Telephone Extension Bells. 45V \$2.00
230 Volt RVB Horn Tested \$7.95

TRIO 3" OSCILLOSCOPE DC — 1.5 MHz MODEL CO-1303A



SPECIAL FEATURES

1. Vertical sensitivity of 20 mV/cm, three step attenuation, AC DC operation & wideband frequency response from DC to 1.5MHz.
2. DC vertical and horizontal amplifiers for wide versatility make possible external sweep speeds of less than 1Hz.
3. All solid state construction for compact, lightweight portability.
4. Smoked filter glass CRT face and exclusive designed graticule, graduated in dB for clear waveform comparisons.
5. Direct input to 150MHz for SSB and AM transmission monitoring.

Price \$150. p & p \$2.00

AUGUST DISPOSAL SPECIALS

Coax. Cable, 58 ohm Ascand 15 P1/24. Brand new 1/2 outside diameter. 12c per yard. \$10 per 100 yard reel.

T.C.A. COMMUNICATIONS RECEIVERS (R5223)

Frequency Coverage 1.5 MHz-30.5 MHz in 29 1 MHz bands. B.F.O., 100 kHz xtal cal., audio filter, in as new condition. Complete with new Phones \$295

Brand new valves and semiconductors

2N3055	\$1.30
0A91	15c
807	\$2.00
1T4, 6C8, 1R5	75c
6BA6-6AK5-6V6G-6J6	\$1.00
2E26-QQE04/7-QQE04/10	
6SK7-ECH35-6K8G-5763	\$3.00
6SJ7GT-12AT7	\$1.50

HAM RADIO (Disposal Branch)

104 Hightett Street, Richmond,
Vic., 3121

HAM

RADIO SUPPLIERS

323 ELIZABETH STREET, MELBOURNE, VIC., 3000

Phones: 67-7329, 67-4286 All Mail to be addressed to above address

Our Disposals Store at 104 HIGHTETT ST., RICHMOND (Phone 42-8136) is open Mondays to Fridays, 10.30 a.m. to 5.0 p.m., and on Saturdays to midday.

amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA, FOUNDED 1910



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QSP

AIR WAVE ANARCHY

Listening on 14 MHz during early July you would probably have heard, around 14250, a very strong broadcast signal "jammed" by an even stronger station, swinging over 25 or 30 kHz.

Many "intruders" have appeared on the amateur bands in the last 25 years or so. It is many years since a "jammed" commercial, particularly of such signal strength, has appeared in exclusively amateur allocated frequencies. The origin of the commercial and its jammer is, at time of writing, undetermined but this is currently under investigation.

Intruders and pirates are nothing new to us but one wonders why many of the pirates do not hold or have not bothered to apply for a station licence.

Early in July, I received an overseas telephone call from an irate ZL who rang my office from New Zealand and abused me for not having sent him a QSL for the electorate of Phillip. Since I had not worked this ZL station and, in addition, live in the electorate of Flinders, he reluctantly accepted my explanation for not having QSL'd. Over the last 12 months I have received 18 QSL cards for contacts on 3.5 MHz CW from stations which I have never worked — being essentially a 14 MHz RTTY/Phone operator.

Surely a person who can receive 599 reports on CW, and on back-check, at speeds of 20 to 25 wpm, should be able to qualify for an amateur licence.

Not only are pirates of this type proliferating but so also are those operating in the "Citizens' Band". A recent printed sheet distributed in Melbourne indicates a growing political lobby by those CB operators who claim a "right" to operate in the public interest.

"Public Interest" be damned! The Institute is well aware of the activity of pirates both in the 11 metre band and elsewhere and has consistently pressed for firm action to be taken against the law-breakers by every possible means.

Furthermore, the Institute has made officially known its feelings and taken action to draw attention to two additional considerations; namely: the conservation of the frequency spectrum and the disrepute of the "Citizens' Band" radio in certain overseas countries where it is authorised.

Reports reaching the Institute appear to indicate that CB operations in the USA are now so extensive that little or no control can be exercised over them. Unlike the amateur and many other services which are largely self-policing, the CBers (and pirates) are known to exercise less control, if any, over their own activities.

It is to be hoped that the authorities are alert to the severe dangers inherent in legalising this kind of radio communication without the necessity to comment on the alternatives such as the use of the telephone and similar public services, keeping in mind the aspects of safety relating to the use of electrical apparatus and the fear of potentially great interference to other services and facilities.

JOHN McL. BENNETT VK3ZA

STOP PRESS

Project Australia report that the call up date for Oscar 7 is now 3rd October, 1974.

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Copy is required by the third of each month. Acknowledgment may not be made unless specially requested. All important items should be sent by certified mail. The Editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying any reason.

Advertising:

Advertising material should be sent direct to P.O. Box 150, Toorak, Vic., 3142, by the 25th of the second month preceding publication. Phone: 24-8852.

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AMATEUR SECT

AMATEUR SECTION ENLARGED

Call in soon and see some of these super new lines at the Gore Hill Centre.

TRANSCEIVERS R.F.

Kenwood TS-520 100W, SSB transceiver covers 80 to 10 metres. Features noise blanker, VOX, DX switch, 8 pole crystal filter, CW filter etc. Has fully transistorised receiver power supplies. This is a really deluxe job in diecast case, not the usual pressed metal construction. Delivers due in September, but order now as demand will be heavy at **\$550.00** (Road freight extra).



TRANSCEIVERS 27 MHz

Hi Gain SSB/AM, 23 channels gives 5W on AM and 15W on SSB. All channel crystals included. Features ANL and noise blanker, PTT mike. Operates on 12V dc and has rf output and S meter. Indent price is only **\$300.00** (normal retail is \$275).



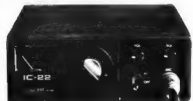
Sideband NC310 1W hand-held units. PMG approved, 3 channel capacity, Squelch. External aerial jack. Provision for external supply etc. Supplied with 27.24 MHz crystals (see below) **\$49.75** each.

Yaesu Musem FT-101B the famous 160-10 metre, AC/DC transceiver is now available direct from us. Indent price is just **\$525.00** (Road freight extra).



VHF EQUIPMENT

Icom IC22 144-148 MHz, FM transceiver has power outputs of 1W and 10W. The 22 channels all have separate trimmers. Deviation 5-15 kHz. Features solid state Tx/Rx relay, large built-in speaker, MOSFET front end with 5 helical filters, noise cancelling mic., quick disconnect mobile mount. And if the spec doesn't grab you, the look will. Soft green back lighting, special transmit light and even a light to tell you of incoming signals if the volume is turned down. Supplied complete with workshop manual and accessories right down to a silicone cloth to keep the set like new.



Yaesu Musem FT200/FP100 combination also at only **\$370.00** (Road freight extra).



CS78 Pony 5W AM, 23 channel complete with all channels and ideal for the novice licence when it starts. Mic. included for only **\$99.00**.



Fitted with an set of crystals for 145.00 or 146.5 MHz (please specify). Normal price is \$245 but we are introducing them at only **\$199.00**, freight anywhere for only \$3.50 including insurance. Crystals are also available at **\$9.00** a pair as follows:

	Tx	Rx
Old Channels		
Channel 1	145.1	145.8
Channel 4	146.1	145.9
Channel B	146.00	146.00
New Channels		
42/45	146.1	146.7
46/50	146.4	147.00
80	146.5	146.5

Ken KP202 146-148 hand-held transceiver, has 5 channel capacity with 2W output. Telescopic aerial, squelch, provision for external aerial and PL250 adaptor plug supplied. Operates on penlight cells. Crystals included for 3 channels. A very popular unit that we are introducing at **\$150.00** (P&P \$2). Crystals included as follows (please specify):

Alternative A	Tx	Rx
1 Channel 50	146.5	146.5
2 Channel 42/54	146.1	146.7
3 Channel 46/50	146.4	147.00

Alternative B	Tx	Rx
1 Channel B	146.00	146.00
2 Channel 1	146.1	146.6
3 Channel 4	146.4	146.5

Special KCP-2 NiCad battery set and charger with 10 cells to suit the KP202 available at **\$35.00**.



ION ENLARGED



Power Supply for above units, fully regulated 12V @ 3A from 240V mains \$32.50.

CB74 Pony SW, AM, 8 channel capacity but crystals for one channel only supplied (see below). PMG approved and intended for fishing clubs etc. Complete with mic. and accessories at \$97.50.

Crystals for Pony CB74 and Sideband NC310. Australian PMG approved channels 27.4 MHz (general purpose) \$6.00 a pair, 27.88 MHz (fishing clubs) \$7.50 a pair. Other channels are available all at \$4.50 a pair. Channel 9 (27.065), Ch11 (27.085), Ch14 (27.125), Ch16 (27.155), Ch19 (27.185), also 28.100, 28.200, 28.300, 28.400, 28.500, NOTE each pair consists of Tx on stated frequency plus Rx 455 kHz below channel frequency.

COMMUNICATIONS RECEIVERS

We are now stocking the fantastic **Barlow Wadley XCR-30** which covers 0.5 to 31 MHz. See the review in E.A. May 73. Use the famous Wadley loop principle found in many professional receivers. Ultra stable, highly sensitive for SSB and AM reception. Better than 0.1 uV sensitivity for 17 db sig/noise. Drift less than 70 Hz per hour, 3 kHz selectivity. Built-in telescopic aerial. External aerial, earth and headphone jacks plus provision for external supply. A beauty at \$159.95 (freight free).



Try the **BR505** 0.5 to 30 MHz receiver is still the ever popular budget priced job featuring product detector for SSB, 240V operated. Only requires speaker. New price is down to \$152 (includes freight).

AERIALS

We have placed large orders for the famous **Hustler** aerials from the US. See our ads last November/December and watch for further announcements. Special 27 MHz helical for mobile and base use. Only 48 inches long with 8 ft. of coax and PL259 connector \$24.75.

SELL YOUR EQUIPMENT THROUGH US

Take advantage of our FREE Noticeboard to advertise to the many thousands of enthusiasts that pass through the Centre each week. We will also sell good used gear on consignment (callers only). Send your ads direct to Dick (we are NOT responsible for the outcome) or call in and ask for details.

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Head Office and Mail Orders —
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No.	Turns per inch	Length	B & W. Equiv.	Price
1-08	1/2	8	No. 3002	75c
1-16	1/2	16	No. 3002	75c
2-08	3/8	8	No. 3006	88c
2-16	3/8	16	No. 3007	88c
3-08	3/8	8	No. 3010	\$1.06
3-16	3/8	16	No. 3011	\$1.06
4-08	1	8	No. 3014	\$1.19
4-16	1	16	No. 3015	\$1.19
5-08	1 1/4	8	No. 3018	\$1.32
5-16	1 1/4	16	No. 3019	\$1.32
8-10	2	10	No. 3907	\$1.91

Special Antenna All-Band Tuner Inductance

Equivalent to B & W. No. 3907 7 inch length, 2" diam., 10 turns/inch, Price \$3.30

References: A.P.R.L. Handbook 1961: "QST" March, 1959. "Amateur Radio", Dec. 1959.

Write for range of Transmission Cables

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PTY. LTD.

Manufacturers and Importers
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VIC. 3126 Phone 836-0707

NEWS FLASH.....

FLASH! We are happy to announce that previous Customs requirements of Amateur License, and copies of signed order are no longer required for purchasers of INOUE-ICOM VHF Transceivers 50-54 and 144-148 MHz.

Consequently there will be increasing availability from stock of popular INOUE lines. Prices have remained unchanged for the popular IC22 and IC60.

IC22 with 2 channels	\$198
IC60 with 2 channels	\$220
IC30 (430 MHz)	\$370

All prices include Sales Tax and delivery anywhere in Australia.

MAICO ELECTRONICS
MOUNT STREET, HEIDELBERG Ph: 45 2615
TELEX 32720

MODEL HK-701. Heavy Duty De Luxe Hand Key, fully adjustable, ball bearing shaft, plastic protective cover. Mounted on heavy non-skid poly marble base. Price **\$18.00**
Base dimensions 168mm x 103mm.



MODEL MK-701. Manipulator Paddle (Side Swiper) key. A superb action unit for electronic keying. Price **\$22.50**
Base dimensions 154mm x 84mm.



HY-GAIN (USA), from BAIL ELECTRONIC SERVICES. We are pleased to announce that our latest shipment of Hy-Gain antennas has now left America and is expected to arrive about the middle of this month. The shipment will include Tri-band beams, Quads, monobanders, trap verticals, baluns, lightning arrestors, an assortment of 11 m antennas and beams including mobile and boat antennas, VHF beams and verticals.

ROTATORS from CDE (USA), models CD-44 medium duty, and the heavy duty HAM II are now expected around end of this month or early September after delayed shipment. Also, we now have available the **BARLOW-WADLEY XCR-30** receivers, and a new batch of 24 hour digital clocks AC and battery types. And, last but by no means least (handy to have around when the band goes dead, or a nice gift for the XYL!) a very excellent AM/FM digital clock radio with music or buzzer alarm, slumber switch, etc., 230V AC, in teak finish, only **\$65**.

The **KW** antenna couplers are sold out except for a few **KW-109** & **KW-160**. The **KW-109** is a higher power version of the **KW107** @ **\$180**, and the **KW-160** is an "L" network single wire feeder coupler especially for 160 m, **\$38**. It is also available on 80 & 40 m. Another **KW** shipment is on order and we have been promised prompt despatch on this one. We do have in stock plenty of **KW** multi-band dipole traps, **KW-103** SWR/Power meters, baluns, and a few **KW-106** monitorscopes and dummy loads.



ELECTRONIC SERVICES

60 Shannon St., Box Hill North, Vic., 3129.

Ph. 89-2213

OLD: MITCHELL RADIO CO. 59 Albion Road, Albion, 4010.
N.S.W. STEPHEN KUHLE P.O. Box 56, Mascot, 2020.

Ph. 57 6832
Ph. Day 667 1650

S.A. FARMERS RADIO PTY. LTD. 257 Angus Street, Adelaide, 5000.
W.A. H. R. PRIDE 26 Lockhart Street, Perth, 6000.

A.H. 371 5445
Ph. 23 1268
Ph. 50 4319

BOOKS OF INTEREST FOR AMATEUR OPERATORS

DATA PUBLICATIONS—AUDIO AMPLIFIERS	\$1.90
PHILLIPS—1974 POCKET BOOK	\$2.00
DE MUIDERKRING—TRANSISTOR EQUIVALENTS, 8th Edition	\$4.95
RCA—SOLID STATE SERVICING (Radio, Recorders, Hi-Fi, etc.)	\$5.95
RCA—RECEIVING TUBE MANUAL	\$3.75
RCA—COS/MOS INTEGRATED CIRCUITS MANUAL	\$3.75
J. M. FROST—HOW TO LISTEN TO THE WORLD	\$4.95
ARRL—THE RADIO AMATEURS HANDBOOK (1974)	\$6.95
R. G. HIBBERD—INTEGRATED CIRCUIT POCKET BOOK	\$8.30
PHILLIPS—FAST RESPONSE PHOTOMULTIPLIERS	\$3.45
PHILLIPS—RECTIFIER DIODES	\$3.45

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INTERSTATE 75c

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QSP

Keeping up good communications between city-based Councilors and country zone members is a problem which besets all Divisions. In an attempt to bridge the gap, Victorian Division Councilors have embarked on a scheme to regularly visit and hold Council Meetings in the Zone centres. In addition, "Advisory Council" meetings — subsidised by the Division — are held in Melbourne, with representatives attending from all country zones. The move has been an instant success.



VK3 Councilors on a weekend flying trip which took in Horsham, Mildura and Canberra. L to R: Pilot, Russell Kelly (VK3NT) Fed Councilor, Mike Goode (VK3BDL) Treasurer, Phil Fitzherbert (VK3FF) Secretary, Peter Williams (VK3IZ) President. Remaining passenger — Mike Trickett (VK3ABQ) V. President, took the photograph.

AR COSTS

Ever thought what it costs to bulk post AR to you in Australia? A year ago the average annual cost per member was a little over 42 cents. Today it is 54 cents, next year it will be \$1.08. The cost of printing AR has been comparatively steady during the past year at about \$3.42 per member but with rising costs of wages and paper this could be as much as \$4.25 next year. All the other costs incidental to getting AR into distribution are also rising.

EROSION

Jack Hurn G5UM in Rad. Communications, May 1974, includes in his Four Metres & Down column a note from 9M2DQ saying "since last October the 9M2 men had lost the whole of the 2m band, an action apparently the work of a combined Brunei-Malaysia-Singapore frequency allocation board". This is a little near to us and bodes ill for amateurs at the next ITU Conference. Pressures from the "Third World" powers might already be manifesting themselves.

IARU FINANCES

QST for Mar. '74 quotes "The International Amateur Radio Union has operated since its foundation in 1925 without any treasury or funds of its own. ARRL has underwritten the administrative costs of a headquarters operation, and most work elsewhere has been on a volunteer basis. With the establishment of regional organisations, however, it was decided that each area should finance its own activities, and this has been done by an assessment of a nominal amount per individual licensed amateur member levied on each member society. It is only natural that many ARRL members appraise the worth of their dues mostly on the basis of tangible returns — primarily receipt of QST. More discerning individuals additionally recognise the necessity of supporting those further services which are of collective benefit to all amateurs — regulatory representation, information sources, public relations activities, training aids, code practice and such. But it is unlikely that many are aware our ARRL contributes each year (towards) the operation of the Region II organisation. The purpose remains closer liaison between our organised groups for a stronger amateur radio — one better able not only to retain our bands at future frequency conferences, but enhancing the likelihood of some additional HF space to provide for growth".

AMATEUR FREQUENCIES

"However, in the vital omnipresent role in our lives which communications and electronics involve us on a national basis, would you believe that amateur radio ranks close to the bottom". Excerpt from an address by W6BW, A. Prosser Wether, Chief of the Amateur and Citizens Radio Division of FCC, as quoted in QST March '74. Later on in his talk W6BW quoted the "box-score" of allocations to major service categories between 3 and 30 MHz as follows —

Radio Astronomy	20 kHz	—
Aeronautical	1770 kHz	3%
Broadcasting	2150 kHz	10%
Amateur	2850 kHz	13%
Maritime	3650 kHz	16%
Fixed	10157 kHz	50%

"It is up to us", he said, "to find every way conceivable by which amateur allocations may be not only preserved, but improved throughout the HF spectrum".

LICENCES — VRI

If you should ever visit the Gilbert and Ellice Islands it is interesting to observe that the Colony is tied to the United Kingdom with regard to the issue of amateur licensing. This also includes Ocean Island under the call sign group VR1.

VHF PENETRATION INSIDE BUILDINGS

Brian Austin ZS6BKW writing in Technical Notes for Radio ZB, April '74, quotes from a OCIR Study Group Document 8/179-E relating to radio paging systems and initial experiments done by the EPO from the London Post Office tower 178m a.s.l. The relative media field strengths, normalised for the same effect radiated power at each frequency are shown under MHz, dB inside buildings and dB outside buildings as 90 MHz 0 and +13, 180 MHz +1 and -14, 460 MHz -4.5 and -15, 990 MHz -6.5 and -10.5, 1500 MHz -15 and -3 (reference level — 0 dB). These figures represent the trend rather than as absolute figures but still indicate that for equal ERP's signals around 460 MHz penetrate into buildings with greater signal strengths than those at any other frequency quoted.

DEPARTMENT OF CUSTOMS & EXCISE

Quote C.G. 72/78694

5 June, 1974

Dear Mr. Dodd,

I refer to your letter of 8 May concerning Amateur Radio Transceivers.

As advised verbally by Mr. Collins, the Department also realised that the reference referred to in my letter of 18 April imposed restrictions not intended to transceivers of a kind used by amateur radio operators in the 10 metre band which may go to an upper frequency limit of 30 MHz. Action has been taken to adjust this matter and attached for your information is a copy of the relevant Consolidated By-law Reference page which includes the amended reference.

In regard to by-law admission of transceivers not covered by the reference, the position is as outlined in my letter of 18 April. There will not be any necessity for importers to submit amateur licences, as applications received will be considered under normal by-law criteria.

As this letter supersedes that of 18 April I would prefer that it be used in the magazine and I have no objection to it being used in this regard.

Yours sincerely,

P. A. Murphy,
Director, By-law Operations

FREQUENCY BAND LOSSES

Writing in Microwaves in Rad. Communications, May '74, Dain Evans, G3RPE comments — "The news from France is bad. They have recently lost the use of the 1215-1220 MHz and 1880-1900 MHz parts of the 23cm band. The allocation 433-434.5 MHz has also been withdrawn. Operation in the whole of the 13cm band from 2300-2450 MHz is no longer permitted except with special authorisation, and then only from specified sites. There are also geographical limitations on the use of the 3750-3770 MHz sub-band".



17,000 new amateurs in Australia? That's how many there would be if everyone who received brochures on amateur radio at the mid-May "Sydney Morning Herald's" second annual hobbies exhibition applied for a license. The brochures contained information on soldering, kits and amateur radio and were provided by Dick Smith, a leading electronics centre in Gore Hill, Sydney. Tom, VK2ATW / WA7DPO, left, manned the booth for 70 hours along with members of the University of New South Wales Amateur Radio Society, VK2BUV. Several hundred genuine enquiries concerning amateur radio license procedures were answered as well as describing amateur radio in general to several thousand individuals. Numerous individuals had never even heard of amateur radio showing that considerable publicity is needed for the hobby.

An SL600 series SSB transceiver

BRIAN D. COMER, G3ZVC
Plessey Semiconductors, Wiltshire, England

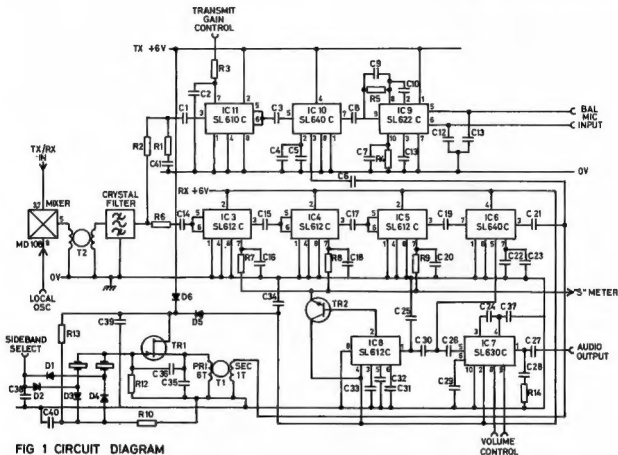


FIG 1 CIRCUIT DIAGRAM

Component List:

IC3, IC4, IC5
IC7
IC9

D1, D2, D3, D4, D5, D6

Q1

Q2

Filter

R1, R3, R7, R8, R9, R11

R4

R6

R12

C1, C2, C3, C4, C11, C12, C22

C6, C14, C15, C17, C19, C21

C9

C13, C25, C37, C39

C24, C28, C38, C40

C29, C30

C34

SL612C

SL630C

SL622C

IN4148 or similar low capacitance Silicon switching diode.

2N3819 or similar N channel JFET.

2N706 or similar low cost Silicon NPN transistor.

S.E.1 QC1246AX with sideband crystals (or K.V.G. XF-9B)

100 ohms

30 K

51 ohms

100 K

1 nF WeeCon.

100 pF Ceramic

47 nF WeeCon.

100 nF WeeCon.

10 nF WeeCon.

1uF Bead Tantalum.

500 uF Al Electrolytic.

IC8, IC10

IC8

IC11

SL640C

SL621C

SL610C

R2

R5

R10, R13

430 ohms

1 K

330 ohms

C5, C8, C23, C26 10 uF Bead Tantalum

C7, C32 47 uF Bead Tantalum

C10 2 uF Bead Tantalum

C16, C18, C20 4.7 nF WeeCon.

C27 150 uF 8V Al Electrolytic

C31, C33 100 uF 6V Bead Tantalum.

C35, C36 68 pF Ceramic.

Mixer.

Anzac MD108 Hot carrier diode ring mixer.

This article describes the IF and AF signal circuitry of a single-sideband transceiver designed by the Applications Department of Plessey Semiconductors using their SL800 Series Integrated Circuits. The transceiver may be used at any frequency from a few kHz to 500 MHz.

The unit described in this article consists of a single printed-circuit board which requires only the addition of a local oscillator, a preselector, a linear amplifier, volume control, microphone and loudspeaker to make a complete transceiver.

RECEIVER
The receiver consists of a single-conversion superhet with a 9 MHz IF. In order to optimise its intermodulation performance there is no RF amplifier and the incoming signal is fed directly to a hot-carrier diode ring mixer and then to the crystal filter. The IF sensitivity is such that at frequencies of 30 MHz or less no RF amplification is required if a reasonable antenna is used (as it would be with a transceiver) but if the receiver is used at frequencies of over 30 MHz, or with a less than ideal antenna, some RF gain may be necessary to obtain the necessary noise figure. The RF amplifier used should have the lowest gain consistent with the frequency and antenna to be used and must have good large signal handling capability if the receiver performance is not to be degraded. The mixer is an Anzac MD108 hot-carrier diode ring. This was chosen for its conveniently small size, high performance and low cost, but doubtless similar devices from other manufacturers could be used. All the ports of this ring are 50 ohms and two have a frequency range of 5 MHz to 500 MHz while the third has a frequency range of DC to 500 MHz. The input from the antenna is applied to this DC to 500 MHz port via a preselector, and the local oscillator at a level of +7 dbm (500 mV rms) — is applied at pin 8. The mixer

output from the last port passes a ferrite toroidal transformer to match it to the 500 ohm input impedance of the filter. If other filters are used the impedance-matching transformer may need to be altered.

Once the signal has passed the crystal filter, a 2.4 kHz bandwidth 9 MHz filter with 90 dB stopband suppression (the SEI QC1246AX), there is little further risk of cross-modulation or intermodulation. The IF strip consists of three cascaded SL612C IF amplifier circuits followed by an SL640C product detector. Without agc applied each SL612C has 34 dB gain, and 15 MHz bandwidth. A broadband IF strip of three SL621Cs has over 100 dB gain and 15 MHz bandwidth and can very easily become unstable. The circuit board layout used for this transceiver is critical if the IF strip is to be stable. It is relatively easy to make a three stage broad-band strip on double-sided printed circuit board if the component side is left as a plane of grounded copper, but on single-sided board the layout used in this article should be rigidly adhered to.

The beat frequency oscillator for the product detector is a FET crystal oscillator. It delivers about 100 mV rms to the SL640C product detector and also supplies the carrier for the transmitter modulator. One of two crystals for upper or lower sideband is selected by diode switches.

The detected audio from the product detector drives an SL830C output stage, which is capable of providing about 65 mW to headphones or a small loudspeaker and also drives an SL621C agc system. The SL830C has voltage-controlled gain so the volume control consists of a potentiometer providing a control voltage to the SL830C. If 65 mW is insufficient output (it is worth listening to it before deciding as it is usually adequate for domestic listening) an external higher power audio amplifier may be driven either from the SL830C output or directly from the product detector.

The agc is provided by an SL621C audio

derived agc system. Its output is buffered by a transistor Q2 to enable an 'S' meter to be connected if required. Since Q2 reduces the available agc voltage swing, agc is applied to all three IF stages to ensure that the agc can cope with the receiver's 114 dB dynamic range. If R7 is replaced by a germanium diode there will be a delay to the first stage agc which may improve the receiver noise figure very slightly on small signals — this is barely worthwhile. The capacitors C16, C18 and C20 are kept down to 4700 pF in order to retain the ignition suppression characteristics of the system.

TRANSMITTER

The transmitter is also single conversion. It generates single-sideband at 9 MHz by the filter method using the same crystal filter as the receiver. The 9 MHz SSB is then converted to the final frequency by the MD108 ring mixer with the unwanted product being removed by the preselector. This system entails no signal switching between the antenna side of the preselector and the transmitter/receiver side of the crystal filter on the change-over from receive to transmit. All the transmit/receive switching on the board is achieved by turning on the appropriate power line (transmit or receive) and grounding the unused line. The grounding of the unused line is most important and instability can result if it is not done.

The audio input from the microphone is amplified by an SL622C agc amplifier which will give a constant 100 mV rms output for a 60 dB range of input. If a single-ended input is used rather than a balanced input this dynamic range is reduced to about 46 dB. In most systems 60 dB input dynamic range is too large, 40 dB being sufficient, so R5 has been included in the circuit. If 60 dB is required R5 should be omitted and C9 reduced to 4700 pF.

The audio output from the SL622C goes to the SL640C double-balanced modulator. The carrier input to this modulator is fed by the BFO (which works on both transmit and receive since its power may be derived from either line via diodes D5 and D6). The output of the SL640C consists of double-sideband with low carrier leak (usually -40 dB on signal) which is amplified by an SL810C which may have its gain controlled either by an ALC signal derived from the transmitter linear amplifier or manually by a DC gain control. This amplified DSB is applied to the filter to yield SSB. Resistors R1 and R2 ensure a correct match to the filter both on transmit and receive.

The SSB output from the filter passes to the diode ring via the impedance-matching transformer and is mixed with the local oscillator to give the final transmitter frequency (and an image which is removed by the preselector). This is amplified by the linear amplifier and transmitted. The output from the preselector is about 70 mV rms.

CONSTRUCTION

The system is built on a single-sided printed circuit board with two wire links — one in the receive supply, the other in

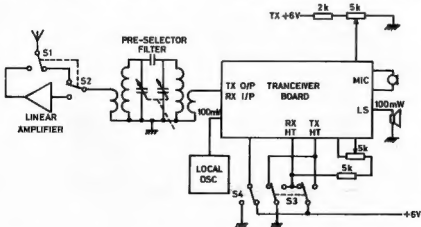


FIG 2 BLOCK DIAGRAM OF TRANCEIVER

the transmit supply. If only a receiver is required the components R1 and R5 inclusive, C1 to C13 inclusive, C40, and the semiconductors IC9, IC10, IC11, D5 and D6 must be omitted, a wire link connected where D5 was, and a 500 ohm resistor connected from the filter end of R6 to earth.

The layout of the board is critical and changes of printed circuit design will almost certainly lead to instability unless double-sided board is used. The design shown may be built on double-sided board quite safely.

The components used in the original are given in the list below. Bead tantalum capacitors are used where possible for their small size but since they are hard to obtain in high capacitances at high voltages aluminium electrolytics have been specified in three places. The WeeCon capacitors specified may be replaced with other miniature high-K ceramic capacitors but the values of any components should not be altered without very good reason. The resistors are all 1/4 W 10% types.

Transformer T2 is made on an ITT CR 071-8A ferrite core.* Four 5 cm lengths of 25 swg wire are twisted together and two turns are wound on the core with the twisted wire. The ends are then opened and three windings are connected in series for the filter winding and the fourth is used as the winding connected to the diode ring. Transformer T1 is wound on a core of the same type and has a 6 turn primary and a single turn secondary.

CONCLUSION

The circuit diagram of the system is shown in Fig 1 and a block diagram of its use in a single band transceiver in Fig 2. Obviously it may be used in many different transceivers, the one in Fig 2 being the simplest. Fig 3 is the printed circuit master and Fig 4 shows the component placement.

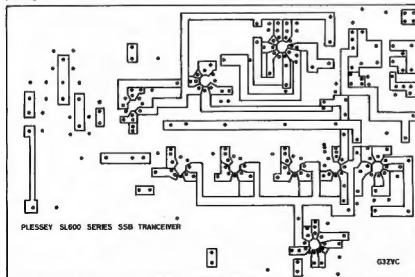


FIG 3 PCB LAYOUT

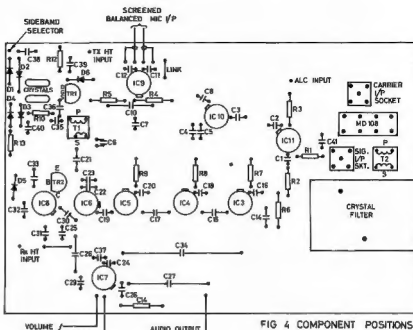


FIG 4 COMPONENT POSITIONS

This transceiver is probably the simplest which may be made using the SL600 Series but its performance is not compromised. It has a sensitivity of better than 0.5 μ V for 10 dB S/N, it can handle signals of over 200 mV rms at the diode ring with minimal intermodulation, and the board uses less than 500 mW on transmit or receive. It has been designed so that anyone with basic technical competence but without previous experience in SSB transceiver design can build a successful SSB transceiver. Probable users are both amateurs and small firms wishing to enter the SSB transceiver market.

*Any small ferrite or iron dust toroid with cross-section greater than 3 square millimetres and diameter between 7 and 12 mm, capable of working at 9 MHz, may be used. Square-loop materials, however, are not suitable.

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DX adventure on Willis Island

The following is a resume of a six month stay at Willis Island Meteorological Station by Kevin Colline, VK4TU/VK9ZC.

Willis Island is the southernmost of the three small islands comprising the Willis group. It is approximately 280 miles ENE from Cairns, past the Barrier Reef towards the centre of the Coral Sea.

It was originally manned in 1921 and used as an OTC Coastal Radio station. Over the years its role was changed to a weather station under the control of the Commonwealth Bureau of Meteorology.

The island is only 13 acres in area, 500 metres by 150 metres. It is abundant with bird life and king size turtles sometimes come ashore.

The weather station is manned in six-monthly shifts by four MET officers, comprising an OIC and three observers. One of the observers is a Radio Technical Officer (RTO) and it was in this capacity that Kevin served. He was on the island from June 1973 to December 1973 and operated on the amateur radio bands with an FT101 in his spare time.

Before commencing the 'expedition', a familiarisation course was held in Melbourne. This covered the Radar installations, communications and other electronic instruments on the island. This was followed by a week with the Commonwealth Department of Works in Townsville for maintenance procedures to the refrigeration, electrical and power installations.

From Townsville, Kevin travelled to Cairns, where he met the other three members of the crew. They were the OIC, John Goonan, and MET observers Trevor Haslam and Jim Milne. The ship, the 'Cape

Morton' took them to Willis Island from Cairns.

Kevin had obtained permission to operate Maritime Mobile on the journey to the island. Despite the 'last night' on the land revelations, he was up on the After Deck at noon the next day. Power on board the Cape Morton is 220V DC, but this was overcome temporarily by borrowing a 12V battery from the ship's radio officer. Unfortunately, the battery was only partially charged, but it kept the FT101 on the air for six contacts before it flattened. The antenna used was an extant $\frac{1}{4}$ wave whip.

With so much to do on arrival at the island, it was a week before Kevin was able to get on the air. Initial amateur contacts from Willis Island were made with the tank whip, then dipoles for 20, 40 and 80 metres. He had taken the materials for a spider quad on 20, 15 and 10 metres, and this went into service in late July. Approximately one month later, the SWR on the quad climbed appreciably, to over 3 to 1. The quad was taken down and an inspection showed that the balun windings had eroded, due to the salt water atmosphere.

Kevin had decided on a single coax feed within the balun attached to the 15 metre loop. Two short lengths of 72 ohm balanced line were attached to the 20 and 10 metre loops. This system worked quite well and the SWR on the three bands was not greater than 1.5 to 1.

After repairs and sealing of the balun were carried out, the quad was mounted on a wooden tower with the centre approximately 10 metres above the ground. Rotation of the quad was by means of a very crude 'Armstrong method'.

The whole system performed with excellence until about 2 weeks before the end of the tour, when the 15 metre loop collapsed. A further victim of the corrosion problem on the island.

Kevin's operating times were somewhat erratic, having to fit in around the TV programmes. TV reception was spasmodic, to say the least, relying on 'ducting' from the mainland. It was found to be best with a medium level Temperature Inversion.

An idea of what quality the night's programmes could be expected was ascertained from the daily Radiosonde Plot of the upper atmosphere, temperature and humidity.

TV reception was primarily from CH3 Townsville, using a VK9ZC 'home brew' 6 element Yagi with a mast head pre-amplifier. A similar design 11 element Yagi was cut for CH9 to try reception from Bellenden Kerr (Cairns). This proved that a useable signal was present if about another 10 dB gain could be achieved. After much experimenting with long wires, V's etc., good TV reception was obtained by using a stacked Rhombic with approximately a 200 foot long axis.

Theoretically, this gave about 24 dB gain at 200 MHz, and was found to be by far the best for long range weak signal TV reception.

The stacked Rhombic gave watchable signals about 5 nights per week.

The 'friendly contest', the RD, really proved itself on the island. Kevin was relieved of his duties for the 24 hours, provided he stayed at the microphone. It was this 100 per cent support from the rest of the crew that enabled him to win the VK9 segment of the contest.

Apart from TV and amateur radio, the only other recreation on the island is a BC band radio, a stereo record player, bird watching and swimming.

There is no contact with the families of the men on the mainland except for a weekly 100 word radio Telegram link with Townsville. This proved to be futile.

A supply plane flew over each 3 months to drop newspapers and essential supplies. On the first drop, the newspapers landed in the 7 foot high surf approximately 100 yards off shore. A successful swimming retrieval was made, and the slightly moist, but readable newspapers had arrived.

Once word got around of the new DX station operating, it was only a matter of time before the dogpiles started. Sometimes for an entire evening through until dawn.

As can be appreciated, that with the heavy QRM, Kevin reported that it sometimes took 15 minutes to extract a call sign and work a station.

Kevin states emphatically that he was



very fortunate to have a QSL manager in the person of Ken McLachlan VK3AH, who was ably assisted by his wife Bett. Many pleasant QSOs between the McLachlan QTH and Willis Island helped to make the tour a very enjoyable one, and their generous assistance was greatly appreciated by the lone operator.

Kevin and Ken had arranged daily schedules on 14200 for transcribing of the VK9ZC log. Most of the QSL cards for the entire log have been sent out.

In all, 2440 QSOs were made with other amateur stations and 112 countries were worked.

As the lonely weeks went by, John Goonan asked Kevin if it would be possible to arrange for his wife Jane, who was living in Melbourne, to talk to him on the amateur band.

It was so arranged by Ken VK3AH to make contact with Mrs. Goonan and organised a local station near her home at Oakleigh, to make the contact.

Bruce VK3AE in Appendale, volunteered to allow Jane Goonan to talk to her husband on the island.

A check with the local PMG Radio Branch confirmed that the transmission could take place provided the provisions of Section 83 of the PMG Regulations Handbook were strictly adhered to. This was duly done.

On Sunday the 29.7.73 Jane and John spoke to each other for the first time in 2 months. Although band conditions at the time were not brilliant, 5 x 5 signals were exchanged and the QSO lasted for 20 minutes.

Both parties were elated at being able to converse in this manner, and subsequently a regular Sunday morning sched. was arranged for the remainder of the Willis Island tour.

Power on the island is continuous 240V AC supplied by 1 of 3 20KVA diesel alternators.

Commercial HF equipment is 2 x 500 watts PEP Racal Transmitters and RACAL receivers, and a 100W PEP emergency transceiver. The main link is with Townsville, but during the tour, an experimental "V" approximately 300 feet long was erected beaming towards Gladstone/Brisbane and brought Willis Island into the coastal cyclone emergency net.

The wind tracking Radar, a Decca WF-2, is used 4 times daily at 6 hourly intervals to collect wind data in the upper atmosphere. The radar tracks corner reflector targets tied to hydrogen filled balloons. The hydrogen is generated each day from caustic soda and Ferrosilicate.

On returning to the mainland, Kevin said that all in all, the tour was a great success, Amateur Radio wise.

He hopes to make a special return journey to the island for one week as a DXpedition, but the dates have yet to be arranged.

At the present time, there are no licensed amateurs on Willis Island. — VK3AE ●



Some of the antennas used by VK9ZC on Willis Island.

PALEC VCT MODIFICATIONS

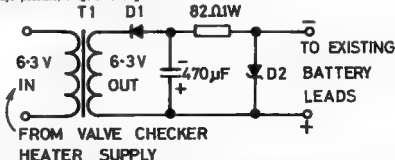
JOHN H. MCCONNELL, VK3RU

23 Stewart St., Ormond, 3204

In the AR issue of April 1986 on Page 2, an excellent article by G. Wall, on the modernising of this instrument to accommodate the emission testing of modern valves was presented. The modification was carried out at this QTH on my "VCT" and has certainly updated and extended the usefulness of this function.

Since most of the functions of the instrument require it to be connected to the AC mains, and complete portability is not always possible, I figured it a good idea

to energize the "Ohm x 1", "Ohm x 10" and "Low Ohm" ranges from the instrument power supply because the 4½ volt dry battery used for this purpose always seemed to be flat when these ranges were required. A very low resistance supply source must be used and the circuit shown in the diagram is completely satisfactory and can be accommodated in a convenient corner or space within the instrument case. ●



T1—Isolating transformer. Wound on small speaker transformer core. Both windings use No. 30 B & S enamel wire. No. of turns for both Primary and Secondary given by formula—

2.8

6.3 x core area in square ins.*

*interleaves laminations when assembling.

*middle leg of core taken for core area.

D1—Low voltage silicon power diode (25 PIV minimum).

D2—4.7 volt Zener diode (low wattage type).

Adding FM to the FT200

J. W. K. Adams, VK5SU
34 Lambell Street, Ceduna, 5890

During the 1972 VHF DX season an FT200 transceiver was used with transverters to transmit CW, AM, SSB and FM modes. The word soon went around that an FT200 was producing FM and many questions were asked by interested amateurs. In response to requests for information (and after much arm-twisting by the Editor) the following article has been prepared. This deals specifically with the FT200 but could be applied to other transceivers in the Yaesu Museu series.

Result

The modification is very simply achieved and involves the varicap diode clarifier circuitry associated with the 5-5.5 MHz VFO and normally used for offsetting the receiver frequency from the transmit frequency by up to ± 6 kHz. This is achieved by varying the dc voltage on a 1S1007 varicap diode (D104) by means of the re-

ceiver clarifier controls, when transmitting, fixed bias is provided for the varicap diode from a voltage divider network and the clarifier control is inoperative.

Transceiver Modifications

The clarifier circuit and the modification for FM are shown in Fig. 1.

First mount an RCA chassis type phono socket or a Jabel spring loaded terminal post in the vacant hole marked "AUX" on the rear of the FT200 chassis. Mount a three tag, tag strip at the socket and solder in the .0047 μ F RF by-pass disc ceramic capacitor and the .1 μ F polyester capacitor. The latter isolates the external audio driver amplifier from the dc voltage present on the varicap diode.

Next, run a short length of PVC covered shielded microphone cable from the tag strip round and through the chassis to the clarifier connection point on the side of the VFO box (Fig. 2). Earth the cable shield to the VFO earth tag and at the three tag strip.

This completes the modification to the FT200.

External Audio Amplifier

There is plenty of scope here and individual requirements will dictate the complexity of circuitry and whether valves or transistors are used.

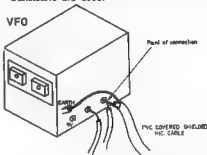


FIG. 2 FT200 VFO CONNECTIONS

It is important that the amplifier has a low impedance output as the audio frequencies are shunted by .01 μ F by-pass capacitors in the varactor diode circuit. Originally, to be operational in time for the 1972 DX season, the three ohm output from a tape recorder monitor amplifier was used as a source of audio.

The valve mic amp shown in Fig. 3 is currently in use (lots of valves still in the junk box), and is built into an FM/AM tuneable IF receiver. Carrier deviation of ± 10 kHz is easily obtained and the audio quality is excellent.

The output transformer used came from the popular disposals SCR-522 VHF transceiver. The characteristics and pin connections are as follows:

Audio Output Transformer 299:

Primary — pins 1 and 2; plate load.

DC resistance — 870 ohms.

Impedance — 15,000 ohms.

Secondary — pins 4, 5, 6 and 7; audio output.

DC resistance — 390 ohms.

Impedance pins 4-7, 4,000 ohms.

Impedance pins 4-6, 300 ohms.

Impedance pins 4-5, 50 ohms.

HT choke — pins 2 and 3; HT filtering.

DC resistance 340 ohms.

Rating 6H/50MA.

Some power is wasted in the terminating resistor but this is included to maintain a load on the transformer.

The output should be shorted or disconnected when the FT200 is used for CW/AM/SSB otherwise unwanted FM of the carrier can occur on transmit and receive.

Operation

Tune up and operate, as for AM operation.

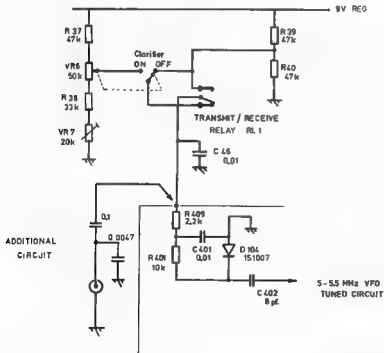


FIG. 1 FT200 CLARIFIER CIRCUIT

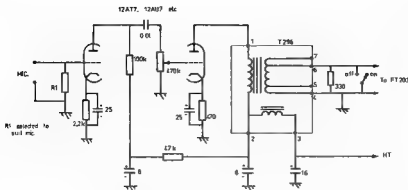


FIG. 3 MICROPHONE AMPLIFIER

Turn down the FT200 microphone gain control to prevent unwanted modulation.

Receiving FM

The FT200 has not been modified to receive FM. A transistorised audio driver amplifier and a 9 MHz IF strip with discriminator or phase lock loop detector could be incorporated without too much difficulty. The 9 MHz IF signal should be taken from the 6U8 receiver mixer, before the sideband filter. I take the 28 MHz IF output from the FTV650 6 metre transverter to a minimum loss resistive splitting network so that the FT200 (receiver) can be used simultaneously with the tuneable IF AM/FM receiver or other tuneable IF receivers.

One advantage of this multiple receiver/mode set up is the ability to monitor amateur beacons, TV stations and net frequencies whilst in QSO on another frequency. VOX or PTT operation is used.

Reference

1. "Adding FSK to the FT200". VK3ASY "AR" September, 1972.

Gleanings from a trip to ZL

From GREGOR COX, VK3ZOG
Per GEORGE, VK3ASY

After much deliberation and farming out of harmonics, together with the XYL we boarded a DC10 on 9th of February and arrived three hours later in Auckland.

Friends met us at the airport and then drove south a distance of 80 miles to Huntly, a major coal winning district. Prior to leaving VK we had determined the various repeater and simplex frequencies in use in the area of our proposed visit, and had acquired the crystals necessary for operation. Repeaters are prefixed with letters A, B, C, D, and for those interested, operate with the following frequencies.—

Output	Input
A 145.8 MHz (Old. Ch.1)	146.30
B 145.65 MHz	146.35
C 145.7 MHz	146.40 (Ch.4)
D 145.75 MHz	146.45

Simplex channel 146.00 MHz is also used quite a lot.

For operation in ZL it is necessary to obtain a licence, which is issued upon production of normal Operator's Certificate and current licence, plus a fee of \$3.00 together with the application form filled in. Any intending visitors who wish to operate, and save time, should write for the application form to: Chief Radio Inspector, 150 Hobson Street, Auckland, New Zealand. Return completed form and fee, and normally within a few days the licence is issued.

Some important points: All "Z" calls

are issued with a "T" call which unfortunately does not allow operation below 144 MHz (No 6 Metres). Unless Full Calls have obtained a licence in the days of 14 WPM Morse, nothing better than a "T" Call will be issued. The gear used on the trip was an STC 131 Carphone, with AC pack for portable operation. While portable in Huntly, with a ground plane nine feet above the ground, 20 separate stations were worked through Channel (as above) situated in Auckland and running 15 watts into vertical dipole. By moving the ground plane a few feet we were able to operate through a channel "B" repeater some 30 miles away in the Waikato area, also running 15 watts but using collinear dipoles.

A car being made available, we set up the gear for mobile operation, using a gutter mount 5/8 whip. We had hoped to operate through another Channel "B" repeater in the Palmerston North area during a trip around the southern section of the North Island. However, a slight mishap not discovered in time prevented any communication; feeding coax through the door does not always work, particularly when the door chops it in two.

Later, we moved north, about 170 miles above Auckland, and had access to another vehicle, and found operation very satisfactory. The repeater at Whangarei is on channel "B" frequency and runs 6 watts. Contact was made with only 2 operators, as most were away during the day time. All told we worked 33 separate stations during the brief visit, and part of the time was spent near Kaitiaki which is well out of range of any repeater.

A few days before our return, we did work a ZL2 from Nelson (South Island) who was getting to the Auckland repeater during a brief period of inversion. All repeaters mentioned were FM, although we understand there are still a few AM systems on the South Island, which are eventually to be phased out. During an eyeball with a Full Call operator in Auckland, mention was made of interest in and listening on 144.1 MHz ssb. Apparently contacts have been made with VK2s on this frequency, and contact with any stations would be welcomed.

Visitors are made most welcome, on the air and by personal contact. There were many meetings we could have attended, had there been time.

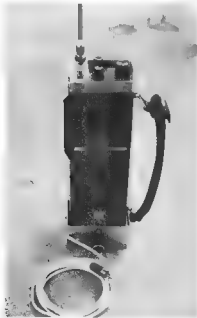
Apart from radio, the place is very scenic. The roads we saw were very good, although sometimes slow because of the many curves. The Government's absolute speed limit of 50 mph was brought in as an economy measure, together with the closure of service stations over the weekends. It has been indicated that during the winter period all weekend travel will be barred apart from road users with permits, so we may spare a thought for our friends across the Tasman who rely on us for their fuel supplies. Duty free shopping on a range of items is available in Auckland City as well as the Airport, however articles are not made available immediately but placed on the ship or plane of your journey and made available at destination. Authority to purchase is recognised by production of travel ticket and Australian Currency.

Commercial Kinks

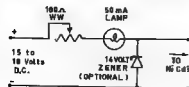
with Ron Fisher VK3OA

Continuing with our series devoted to the KEN KP202 hand-held two metre FM transceiver, this month some ideas on chargers and charging adaptors for nickel-cadmium batteries.

First, a charging adaptor designed and constructed by Bob VK3BU. This little unit is ideal if you already have a DC supply capable of delivering 15 to 18 volts at about 100 millamps. It would also be suitable to use with a twelve volt car system under charging conditions. Another source of voltage often found around the home is junior's model train or slot car power supply. Make sure that the polarity is right and perhaps a series diode might be good insurance. Also a 1000 mF electrolytic across the output of the power supply would be worth while. The series globe in the adaptor serves two purposes. It acts as a charging indicator and also as a current limiter. In operation the rheostat should be adjusted so that the globe lights to about half brilliance with the batteries in a discharged condition.

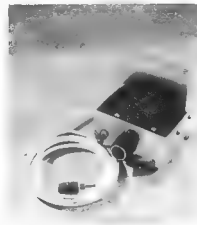


The KP202 sitting in the VK3BU charging adaptor.

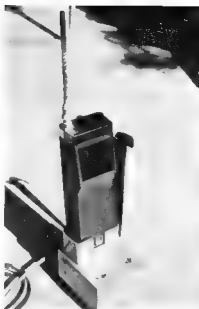


NiCd CHARGING ADAPTOR

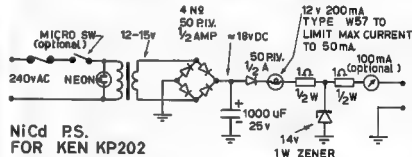
The mechanical construction of the adaptor should be fairly clear from the illustration. It was bent up from light gauge aluminium, the contact studs are simply two 1/8 inch round head screws mounted on a piece of bakelite or similar insulating material.



A close-up of the VK3BU charging adaptor.



The KP202 in the VK3ADP charger.



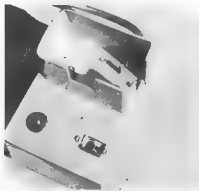
NiCd P.S.
FOR KEN KP202

Now to the second of the two chargers. This was designed by Don VK3ADP and is completely self contained with built-in power supply. The mechanical basis of this is a medium size die-cast box with the KEN holding bracket bent from a piece of perspex after careful heating with either boiling water or a blow lamp. After attaching to the diecast box the whole assembly was sprayed with silver enamel.

Don's unit features quite a few deluxe items. Firstly, a micro switch in the AC line actuated when the Ken is placed in the cradle. A small meter salvaged from an old Japanese tape recorder serves to indicate charging current. The zener diode across the output conducts when the battery voltage reaches 14 volts and thus prevents overcharging.

In conclusion, a few words about charging nicads:

When on charge, battery temperature should never exceed 38 deg. C (100 deg. F). Check on published data for your particular batteries for maximum allowable charging current.



A close-up of the VK3ADP charger clearly showing the AC micro-switch actuator.

The required charging time can be calculated by dividing the amp-hour rating by the charging current, then multiply this by 1.25.

Batteries in series should not be charged unless they are of the same type and in the same state of discharge.

Newcomers Notebook

with Rodney Chamorro, 3UG

44 Rathmullen Rd., Boronia, Vic., 3105

TWO METRE FM REPEATERS — FACTS AND FALLACIES (PART 2) HOW THEY WORK

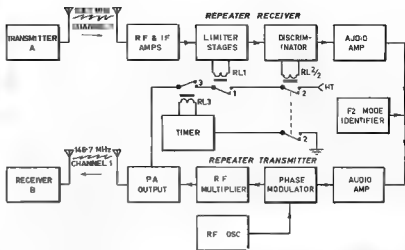
The two metre FM repeater shown in block form in the diagram may or may not exist in Australia, but the general principles still apply. The repeater consists of a receiver and transmitter co-sited and designed to operate with one another at the same time — when a signal comes in of course. The receiver operates all the time and it controls the operation of the transmitter.

The repeater receiver is similar if not the same as the one that you might use to listen to the repeater on. It has the normal RF and IF amplifiers, followed by the limiter, discriminator and audio stages. The limiter and discriminator are shown modified in my diagram. The limiter stages provide a negative voltage at their grids if valued, which can be sampled to drive a relay switching stage. When a reasonable signal is received this relay stage operates because quite a high negative control voltage is developed in the limiter stages. When relay 1 pulls in it closes the first of the series switches in the transmitter HT supply line.

At the same time or nearly so the noise amplifier associated with the discriminator switches on the audio amplifier and also causes relay 2 to pull in. As a signal is received into the discriminator the internally generated noise of the receiver amplifiers is quietened down and causes this noise amplifier circuit to work. So that the good work of the noise amplifier is not spoiled by the received audio on the signal, which can be considered to be audio noise, the band pass of the noise amplifier and the communications audio amplifier are different. The noise amplifier only responds to audio noise above about 3 kHz whereas the communications audio amplifier only responds to audio below 3 kHz.

The discriminator relay once it pulls in switches on the interval timer causing the third relay to operate and so completes the HT line to the transmitter. The input signal to the repeater is now fed to the transmitter which now radiates a signal modulated by the audio signal fed to it from the receiver. This output signal by the receiver must be on a different frequency to the received signal otherwise the receiver would not be able to hear any signal other than its own transmitter.

After a predetermined time, say 2 to 5 minutes the timer circuit releases relay 3, so causing the transmitter to go off the air as it now has no HT. This is the ideal



thing of course to train the chaps who like long monologues, to give other users a fair go. It is also valuable should some carrier come up on the input frequency from a defective service or through someone sitting on their microphone. The transmitter will stay off air until there is a break in this continuous carrier.

The F2 mode identifier is a device fitted to some repeaters to indicate periodically which repeater is being worked through. It sends out the call sign in morse code. To my knowledge only one of the VK3 repeaters has an automatic identifier, but I understand repeaters in other States do have these fitted.

As can be seen, a repeater is not such a complicated device as many might have thought — in principle anyway. Repeaters incidentally are designed with the notion that they must have safeguards inbuilt so that should anything go wrong no damage will occur to the equipment nor will it lock onto the transmit mode. Therefore more care is necessary in the design and construction of a repeater than perhaps the average piece of amateur equipment.

The input and output frequencies on the 2 metre band are spaced 600 kHz which is quite close in frequency relatively. If the transmitter and receiver are co-sited. To overcome this problem many of the repeaters are fitted with cavity resonators or filters in their transmission lines. These filters have a high Q and are used as either rejectors or acceptors of signals. It may be that acceptors are used, in which case the receiver has a filter fitted to its transmission line which only accepts its receiving frequency and the transmitter has a filter that only lets its intended transmission frequency out. If these filters are not used the transmitter tends to block the receiver and make it insensitive and so defeats the whole reason for having the repeater.

I hope this short discussion has been of some help to you in understanding FM repeaters. The operation of individual repeaters will vary from that described but not basically.

Next Month, the EMC edition — Electro Magnetic Compatibility.

Intruder Watch

with Alf Chandler VK3LC

1536 High Street, Glenelg, S.A. 5014

The following is a précis of the main stations reported in my quarterly summary of Intruders as at 30th June 1974, and forwarded to PMG R6GB, AIRL, HARTS, Singapore RO and KMA — 21044-6 A1 4XZ — sending letter code, 0800-0730Z.

21155 A1 KLV — sending "CQ de KLV".
14009 F1 XYZZ — Teletype read-out submitted.
14023 A1 NAP — sending calls.
14005 F1 PBJ — sending calls.
14050-04 A1 QSL — calling CBFN and sending 4 letter code.

14075 A1 UHF3 — calling CQ and sending 5 figure code.
14250 A1 BCX24 — sending news in English.
14355 F1 SZP54/SZP05 — Teletype read-out submitted — "Hainhua news agency Peking".

7010-3 A1 SQNF — calling WXJ4.
7015 F1 "HMR56/HMF21/HME28/HMKT1 freq 1520/7015/3780/8404 has Pyong Yang vuvv . . ." followed by localities.

7028 A1 KDL — sending "CQ de KDL".
7040 A1 UOB — sending "CQ de UOB".
3508 A1 6MP3 — sending "2102 de 6MP3 h".

2009 A1 UOB — sending "CQ de UOB".

Any station sending "h" can be identified as being in Red China. The MHR56 series situated in Pyong Yang in North Korea is annoying many Observers and I am endeavouring to persuade our authorities to institute a complaint. Unfortunately, the FCC in the US cannot initiate any complaint because the United States does not have diplomatic relations with North Korea, otherwise they would definitely issue a manifesto. The second harmonic of the above is heard at strength in the US, but I have had no reports of it being heard in Australia. The frequency would be 14050, and reports would be appreciated, as also would identification of signals heard on the following frequencies — A1 — 21140, 21150, 14050, 14140, 14163-7, 14210.

While travelling around the Orient recently I was fortunate in contacting and meeting personally some of the boys in Singapore, as well as in Darwin. I have promises of co-operation in Intruder matters from both these districts. However, I was unable to see anybody in Japan or in Hong Kong.

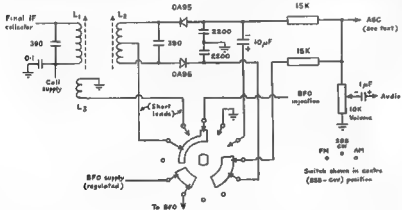
With the departure of Bill, VK2ZQ, to Nauru, a vacancy has been made available for a Co-ordinator in VK2. I am hopeful that this will be filled in the near future.

Try This

with Ron Cook VK3AFW
and Bill Rice VK3ABP

A MULTI-MODE DETECTOR

Some years ago the author built a moderately complex general coverage receiver. During the last few years it has been used mainly as a tunable IF for VHF converters, and may equally well be needed to listen to AM, FM, SSB or CW. The 455 kHz IF amplifiers can be switched to give bandwidths of 3, 10, or 30 kHz, as desired for the chosen mode. The multi-mode detector used has interested all who have seen the receiver, so it was thought worth publishing a description for the benefit of other receiver-builders.



Basically, it uses a diode envelope-type circuit for AM, changes it to a balanced-diode product detector for SSB and CW, and then to a ratio detector for FM. This is all achieved with one slightly unorthodox switch wiper which should not be too hard to duplicate. AGC may be obtained as shown, for AM only, via a suitably long time-constant filter. There will be no AGC voltage at the correct FM tuning point, thus giving maximum limiting. However, the author preferred to use a different amplified AGC system which was effective on SSB also.

IF TRANSFORMER DATA

- L₁ 240 turns 38 SWG enamel scramble-wound length 3-16 inch
 - L₂ 2 x 120 turns bifilar as above
 - L₃ 60 turns wound over L₁
- L₁ and L₂ are on one former, L₃ on the other, of a small Neosid dual transformer assembly. All windings are secured with beeswax.

method of destroying the temporary conductivity of the coherer by tapping it with a hammer driven by clockwork. Many others had also been investigating the subject, amongst whom Mr. Popoff rendered the decoherence automatic by placing the hammer in a relay circuit controlled by the coherer.

In 1897 Marconi appeared in the field, and caused considerable sensation by claiming to have solved the problem of practical telegraphy without wires over long distances. The English post office authorities took the matter up in conjunction with Marconi, and experiments were carried out in different parts of England, but with only partial success. Later Mr. Marconi applied M. Popoff's vertical wire "feeler", his previous experiments having been carried out by means of reflectors and tuning wings, he also improved the coherer and other details of the apparatus with a view of increasing its sensitiveness and power. He is still engaged on this work, and is by latest advice also reducing the height of the vertical wires whilst maintaining the effective distances. As indicating the practical advances which Marconi has made in this direction it is interesting to note that in 1897 he signalled between vessels in the Italian navy nine miles apart, using vertical wires 70ft to 100ft. long, in 1899 between Dover and Boulogne, 28 miles with a vertical wire of 110ft. and in the same year he signalled between two vessels of the English navy 64 miles apart, with vertical wires of 180ft. and 180ft., whilst he has since covered 77 miles with 140ft. of vertical wire.

Although Marconi has during the last few years almost monopolised the attention of the public in connection with wireless telegraphy, other experimenters have not been idle. M. Tissot, in France, signalled 35 miles over sea with vertical wires of 90ft., and M. Popoff, in Russia, also covered this distance, but used higher wires. As up to the present the height of the vertical wires at the sending and receiving stations have an important bearing on the distance which can be covered it was only natural that captive balloons and kites should have been used as a means of obtaining the necessary elevation, and Dr. Slaby, in 1897, by this means signalled 12 miles with wires 910ft. long. Marconi also last year signalled from Salisbury to Bath, 31 miles, using high kites to support his vertical wires at each place.

Marconi and others

A reprint from the special issue of the Daily Telegraph devoted to the new Commonwealth of Australia. This is a portion from the section devoted to topics by current specialists.

THE DAILY TELEGRAPH
WEDNESDAY, JANUARY 2, 1901
WIRELESS TELEGRAPHY
J. Y. NELSON
Chief Electrician, G.P.O.

Wireless telegraphy in a practical form is the result of experimental research of very recent years. In the earlier experiments upon this fascinating problem, carried out by Sir William Preece between 1881 and 1894, with a view of telegraphing through space without the medium of a conducting wire, the electro-magnetic method was adopted. Early in 1894 two parallel wires were erected, one on each side of Loch Ness, with an object of ascertaining the

minimum length of wire necessary to transmit signals by means of induction from one wire to the other. Mr. Gavey who was carrying out the experiments proved that it was also possible to transmit speech through space, and trials showed that speech was possible across the lake a distance of 1.3 miles, between parallel wires, whose length was four miles each.

In 1888, however, Hertz carried out his famous experiments upon electrical waves, which have since been known as Hertz waves, but, owing to the absence of a sensitive detector or receiving medium for such waves, was unable to apply his discovery to practical purposes by the transmission and detection of these waves through considerable distances. Mr. Branly, in 1890, discovered the principle of such a detector in his "radio-conductor", which was subsequently renamed "coherer" by Oliver Lodge. In 1893, who had been working on the problem and hit upon the

"SILENT KEYS — IN CONTEMPLATION"

In spirit they have not died,
But have simply CEY'd.
Old soldiers may just QSB.
But the Ham's appointed place
is on a higher frequency
Where OXers need no mode, rig
To communicate a sig.
Where QRN and static rise
is absent — as is QRX.
Cause of such ignoble strife.
— And while Earth's ops, contemplate,
They, "from up the log", await
On the infinite band
Where OX is earned.
And brotherhood, the kinship grand.
Alan Shewsmith — VK488

VHF HF

an expanding world

with Eric Jamieson VK5LP

THE VHF & HF
FINDING LIST
1983-84

AMATEUR RADIO	
VK0	VK0RG, Macquarie Island 52.180
	VK0MA, Melbourne 53.100
	VK0GR, Casey 53.300
VK1	VK1RTA Canberra 144.475
VK2	VK2WV Sydney 52.400
	VK2WV, Sydney 144.002
VK3	VK3RTG, Vermont 144.700
VK4	VK4WJ/2, Townsville 52.800
	VK4WJ/1 Mt Mowbray 144.400
VK5	VK5VF, Mt Lofy 52.800
	VK5VF, Mt Lofy 144.800
VK6	VK6VF Perth 52.3015
	VK6RTU, Kalgoorlie 52.300
	VK6RTT, Carnarvon 52.800
	VK6RTW, Albany 144.800
	VK6VF, Perth 144.800
VK7	VK7RTX, Devonport 52.200
VK8	VK8VF Darwin 52.180
P21	P21GA, Lae, Nugini 52.180
ZL	ZL1VHF, Auckland 144.800
	ZL1VHF, Wailuku 144.800
ZL2	ZL2VHF, Wellington 144.800
	ZL2VHF, Palmerston North 144.800
	ZL2VHF, Christchurch 144.800
ZL4	ZL4VHF, Dunedin 144.800
JA	JA11GY, Tokyo 52.500

No advice or any listers one or additions to beacon list received this month. At this stage can only guess the VK0 beacon are as listed; no one disputes confirms or denies their existence.

In fact there seems nothing outstanding to pass on to you this time whatever, which is not unusual for this time of the year. However don't forget to take some time this month. At this stage can only guess the VK0 beacon are as listed; no one disputes confirms or denies their existence.

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In fact there seems nothing outstanding to pass on to you this time whatever, which is not unusual for this time of the year. However don't forget to take some time this month. At this stage can only guess the VK0 beacon are as listed; no one disputes confirms or denies their existence.

The other aspect of importance is certainly the fairly well contained Remembrance Day Contest on the weekend of 17th and 18th August. I hope to see a 100% submission from all States this year, remember, every VHF contact is worth 2 points to your HF, and some operators overlook this fact. The HF gang might think about this one too. Plenty of you have at the very least FM equipment capable of VHF operation in the shack. Slide up to the VHF boys a go. ARRL all in. In most cases adjoining States on HF are worth only one point to a State, but VHF to VHF is worth two points to the State - I won't tell you why, you work it out for yourself. My suggestion to VHF operators and HF alike is to listen all call on the requested calling frequency. If you are operating on the tuneable portions of the bands leave your receivers on 52.050 and 144.100. If operating HF and grab the VHF boys as they come up or the frequency VK3 will be well organised this year for an attempt at three times in a row for a win, and by the general interest shown in the R.D. by the VHF boys they will win it!

As information is so scarce this month, I feel this is a chance to reprint a very good article from the "Victorian VHF-F" which concerns all VHF DXers, whether they operate tuneable or FM. The article is headed "VHF, UHF, DX & ALL THAT" and reads as follows:

"There is an aspect of tropospheric propagation, over which some confusion may arise as to when the band is said to be 'open' - may be true to

say that most DX contacts by amateurs occur during band openings, on the other hand, it is equally fair to say that simultaneous band openings and DX are rare situations. When the band is said to be "open" it should be interpreted to mean "broadly open" and can be predicted with a reasonable degree of accuracy, conversely, very long haul DX results from a combination or blending of several distinctly situated conductive mediums and occurs quite suddenly at no particular time, however, the both categories of DX have one thing in common, that is at each end of the path, close to the line of sight distance, there exists a medium with the right amount of refractive index enabling propagation enhancement. For the purpose of further explanation, it can be assumed, that the "broad open" band opening results from a single pattern situation and occurs relatively frequently as compared to the very long haul DX which depends on several more factors such as multiple ducting accommodation and specific distance medium separation. It might be said the most DX depends on ducting accommodation in which case it will be frequency dependent. When such DX is depleted, it is advisable, if a contact is desired, to transmit as near in frequency to that of the calling station. If conditions are such that the signals become perfectly readable without fading, it would be possible to converse contact at some other wavelength, is possible.

"WHEN TO CALL DX. Probably the surest way of contacting a DX station is to have foreknowledge that a certain time the other 'end of the path' will be searching around a nominated frequency. This should be arranged between the interested parties and experiments carried out as often as possible. This type of DX, as indicated above, is highly unpredictable and necessitates many hours of observation and perseverance. CW or SSB are the most appropriate modes of transmission to use as this allows the receivers at both ends to be tuned to a minimum of interference and selectivity that providing for the best signal to noise ratio should conditions prevail. As already mentioned in several paragraphs throughout the series of articles the weather or movement of air and moisture masses will be the determining factor in predicting the frequency of long haul distances beyond 4/3 Earth's radius. The atmosphere (and weather) is bound to the earth by gravitation and moves naturally in the same direction as the Earth's rotation, and the degree of moisture and turbulence determines the actual weather pattern. The atmosphere is either good or bad for DX hunting, good when the normal refractive index of dry air masses change, and bad when the normal atmosphere and its enveloped gases remain static. Practically all coastal regions enjoy plenty of change nearly all the year round, but, the significant change is most prevalent during the warmer months occurs when the warm (lower density) air temperature over the land rises considerably above that over the sea. The warmer air over the land rises and is replaced by cooler air from over the sea and this cycle of events causes the well known sea breeze, whereby the warmer air over the land is pushed over the sea, descends to near sea level, cools, and moves out over the sea, descends to near sea level, cools, and moves inland to complete the cycle.

"THE RAD WEATHER MAP is a worthwhile study for the keen DX hunter. It will indicate with fair accuracy the intensity of cloud fronts, pressure boundaries, areas of instability etc. On a synoptic chart, a collection of complete weather reports at a particular time from observing stations throughout an area are plotted, therefore, they are accurate. The reason why has been mentioned, they do indicate the processes taking place over a horizontal extent of possibly 1500 kilometres. The words 'High', 'Ridge', 'Low', 'Trough' and 'Col', are used to describe pressures even though strictly speaking one pressure is 'greater', not 'higher' than another. The weather patterns are not too complex they may appear as combinations of basic pressure systems. During the warmer months of the year, a 'Blocking High' is the most interesting situation for possible band openings. This High appears to block the normal west-to-east migration of the systems of depression from their migratory systems. At northern Australia the 'Blocking High' then descends to the Low and Trough usually weakening and moving southward, while the migratory Highs appear to merge with the

Blocking High. The only indication on the surface chart is a very large area covered by the High with well above normal pressure contours, and they persist over several days. The blocking High is the trailing edge of this situation which interests the long haul DX hunter, particularly when this edge exhibits a very long taper. Any sudden intrusion by an active cold front, squalls, thunderstorms, etc. have a disastrous effect on the propagation characteristics beyond line sight, although the actual ratio at the mid-point at the boundary will be the determining factor, mostly, but not always, a fall in the barometric pressure indicates a fall in mixing ratio.

"Optical phenomena in the atmosphere is a definite sign that an inversion exists. The existence of a stable layer of air is often indicated by clouds with their lower tops just below the stable layer. haze is also limited in vertical extent and those with portable equipment can use these situations to best advantage by choosing the right elevation of site; most cases of the condition will be frequency dependent in the early hours of a hot day and reaching a maximum in vertical extent in the middle of the day. The above notes indicate a fairly large mass of moist air extends to possibly 3 kilometres in altitude in a high pressure system. If the pressure is great enough winds will result, such as an exhaust system, near the Earth's surface causing the bottom of the moist air mass to be pushed down. The moist air sinks to replace the exhaust of portion and in this process becomes subject to greater pressure, resulting in a temperature rise due to compression. When the temperature gradient or lapse rate is less than three degrees C per 300 metres an inversion is said to exist, even though the upper air temperature may be below that of the lower level. The winds that are caused during the events of a subsidence inversion move in the direction of lesser pressure and are termed 'Gale', 'Troughs' may be well developed to the north and south of the 'Col' and ridges to the east and west. The effects of all this is a general weather and cloud. References 'Engineering Training', Miscellaneous note, MLR 051, Issue 2, 1966 'Manual of Meteorology', Bureau of Met. issued April 1968 'Amateur Radio', August 1969."

PORTABLE OPERATION

Each year from about Christmas to the New Year a number of groups around Australia go out portable to their favourite mountains, drawing the elements, and the values of the DX season for this year could be a very good one for 144 MHz in particular, and it could be well worth while making some concerted efforts to get more groups out portable. It's not too soon even now to think about your equipment, power supply, bands to be covered etc. Compatible personnel are a must. It's not much use going out with someone who suika if things don't work out, someone who drinks too much, smokes too much if you're allergic to smoke and so on.

I will be quite happy through this column to give any group as much publicity as possible in the column. I will be happy to give you the information in time. To start the ball rolling I hereby indicate that I propose going out on one of my favourite mountains from 28/12/74 to at least 1/1/75 inclusive; I will have 500W CW on 52.144 and 432 MHz, and possibly 575 MHz. FM on 52.525, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52, 100w on 144, 40w on 432 and 20w on 575, 50w on 52.525, 80w on 575 MHz. I will be using 500W, 100W, 20W, and above the recognised Australian calling frequencies, will be 52.110, 144.110, 432.110 and 575.110 Australian calling or monitoring frequencies during slack periods would be 52.050 and 144.100.

The above indicates the type of information I believe will be of use to others, and if you send me information I will send you a list of it. Don't forget to say where you just yet because this has not been determined, and will not be so until I have another look at some sites in August, but I'll tell you all when I know!

So be it! I hope you're cracking on the equipment and be ready when the time comes. And what about those who cannot go out, but have VHF gear gathering dust in the shack, what

about supporting the field boys by coming on the air. Whether happened to all the western Victorian stations of years ago on 2 metres? What about the Albany boys getting into the act this year with a vengeance, how about some 432 contacts across the Great Australian Bight and down to Tasmania. I'll stir up the gang in New Zealand as well, and see if we can get them more on the air over there. One thing for sure, if you don't work several States on 144 this year, you may wait for quite a long time to do so, so have that gear turning along in top gear by no later than November.

That's all for this month, must leave you now and look at the portable equipment. Ending with the thought for the month "Sometimes you think the whole world is falling, and it's only yourself that's leaning".

The Voice in the Hills.

Key Section

with Deane Blackman VK3TX

Box 382 Cleveley, Vic. 3168

CYRILLIC ROMAN

А	а	А	—
Б	б	В	—
В	в	В	—
Г	г	Г	—
Д	д	Д	—
Е	е	Е	—
Ж	ж	Ж	—
З	з	З	—
И	и	И	—
Й	й	Й	—
К	к	К	—
Л	л	Л	—
М	м	М	—
Н	н	Н	—
О	о	О	—
П	п	П	—
Р	р	Р	—
С	с	С	—
Т	т	Т	—
У	у	У	—
Ф	ф	Ф	—
Х	х	Х	—
Ц	ц	Ц	—
Ч	ч	Ч	—
Ш	ш	Ш	—
Щ	щ	Щ	—
Ъ	ъ	Ъ	—
Ы	ы	Ы	—
Э	э	Э	—
Ю	ю	Ю	—
Я	я	Я	—

The Russian alphabet now consists of about 32 letters. The script with which the language is written, like our own, is derived from the Greek script. The letters you are reading have passed through the hands of the Romans first. The legend is that the Greek alphabet was taken to Russia by Saint Cyril, and the legend is respected in English because the Russian characters are called "Cyrillic" after him. His alphabet had 43 characters, but a number of purges have occurred, the last of them in the Revolution of 1917 which have reduced the number I am bound to say "about 32" because different lists differ in how many of the rarer characters they use.

Because few places outside of the USSR are in a position to type or print the Cyrillic alphabet it is not unusual to "transliterate" or write in Roman letters the Russian ones. When I came to look this matter up I was a little disconcerted to find there are several sets of such equivalences available, though to be fair it is only a few of the rarer letters that are different between them. If you are merely interested in copying call signs, names and the like the set of equivalences given below, which happens to be that recommended by the British Standards Association, will probably be adequate for your needs. If you are thinking of having a QSO in Russian I imagine you will already be familiar with the Cyrillic alphabet.

I would be interested to hear from anyone experimenting with this, or with the Japanese Morse.



G. DENNY
VK6MT Chairman A.A.R.T.G.
The A.A.R.T.G. has received a request from the Chairman of the British Amateur Radio Telegrapher Group, (B.A.R.T.G.) for the views of those interested in RTTY in Australia and surrounding territories on the question of signalling speeds on the HF and VHF bands.

It is apparent from copies of letters received from the B.A.R.T.G. that the Scandinavian Amateur Radio Telegraphers Group (S.A.R.T.G.) under the Chairmanship of OZ4FF and the PAO RTTY Group (headed by PA0YZ) would like to speed up operations on all bands to 50 bauds on a world-wide basis.

The German Amateur Radio Telegrapher Group, D.A.F.G. (DL3VX, Chairman) are also keen on the change to a single speed of 50 bauds. Enquiries are being made in Canada and the U.S.A. whether they are willing to change to 50 bauds by the B.A.R.T.G. also.

Some Amateurs in the U.S.A. and Europe favor 75 bauds (not permitted under present licensing regulations in Australia) and the Americans are beginning to operate on yet another speed, 66 bauds.

The standard for speeds on the amateur bands, has in the past, been governed by the types of machines available on the surplus market in large quantities, and the U.S.A. took the lead when

large numbers of machines became available from the Western Union telegraph service which originally operated at a speed of 45.45 bauds, often driven by synchronous motors from 80 Hz mains supply. This set the speed standard of 45.45 bauds for international working.

Commercially, in the U.S.A., almost printer operation is either 55.88 or 74.2 bauds and in Europe and Australia (including New Zealand) commercial operation, e.g. the Telex service, is at a speed of 50 bauds as recommended by the C.C.I.T.T. the International Telegraph and Telephone Consultative Committee of the International Telecommunications Union, hence the strong bias towards 50 bauds in Europe, added to which, the majority of machines available on the surplus market are 50 bauds.

Military and fixed link services are tending towards 75 bauds as their standard, this being close to the limit at which a mechanical printing mechanism will stay in one place for any length of time.

In Australia, almost 100 per cent of the machines that are in amateur hands come from a 50 baud service, and the speed has had to be reset to 45.45 bauds to work overseas stations.

The most common machines in VK and ZL are the Teletype 14 and its derivatives, the Greed 78 and the Greed 54. These are almost always fitted with governed motors, thus enabling a change of speed with relative ease, provided some means of checking the final speed is available.

Regarding the speed of 75 bauds, none of the above machines are capable of being pushed that far without disastrous results, although they would reach 50 bauds without too much difficulty.

Having endeavored to explain some of the speed saga, maybe it would be wise to voice your opinion as to the 'standard speed' as soon as possible, and you are invited to write to me as the Chairman of the A.A.R.T.G. to enable some correlation of views and the consensus of opinion in VK and ZL to be made known on a world wide basis via our group.

Please don't put this one aside as your views are important to the rest of the world, if you know of any other Amateur interested in RTTY please pass along this information as soon as possible, so that all may be heard and PRINTED out at the right speed.

CSP

INFLATION

"The Council of ARB in its meeting held in Dec. 1973 discussed the rise in the cost of paper, printing, etc., etc., and decided to reduce the periodicity of 'The Indian Radio Amateur' (magazine) from 8 issues as at present to 3 issues in 1974. The Editorial in March/April '74 issue of Mobile News carries a similar story 'we have carefully reconsidered our estimated income and expenditure for this year, and with no advertising revenue, we can only afford 8 issues of Mobile News in its present format'.

REPEATERS, U.S.A.

As of the end of January, FCC had issued 555 repeater authorizations under the new rules. Some 218 requests are still pending. QST Mr. 74.

FOR YOUR—

YAESU MUSEN

AMATEUR RADIO EQUIPMENT

PAPUA-NEW GUINEA

Contact the Sole Territory Agents—

SIDE BAND SERVICE PTY. LTD.

P.O. Box 795, Port Moresby

Phones 53557, 55511



I mentioned in this column last year that Don, VK3AKN, had been experimenting with Russian Morse. I thought the topic of keying codes other than the International version which we use might be of interest, even if you do not intend working UA or JA in their own languages, so here are a few comments on Russian Morse to whet your appetite. I am grateful to Don for help with the preparation of some of this material.

Contests

with Jim Payne, VK3AZI
Federal Contest Manager,
Box 57, East Melbourne, Vic., 3002

REMEMBRANCE DAY CONTEST 1974

The names and call signs of those who paid the supreme sacrifice.—
Royal Australian Navy

J. E. MANN VK3IE
A. H. G. RIPPIN VK6GR

Australian Military Forces

C. D. ROBERTS VK2JV
J. McCANDLISH VK3HN
S. W. JONES VK3SF
J. G. PHILLIPS VK5BV
J. D. MORRIS VK3DQ
R. P. VEALL VK3PV
D. A. LAWS VK4DR
K. S. ANDERSON VK6KS

Royal Australian Airforce

F. W. S. EASTON VK2BQ
W. ABSTOTT VK2YK
T. STEPHENS VK3GO
J. F. COLTHROP VK3PL
J. E. SNADDEN VK3VE
R. ALLEN VK4BR
B. JAMES VK5BL
P. P. PATTERSON VK6PP
V. J. E. JARVIS VK2VJ
G. C. CURLE VK2AJB
M. D. ORR VK3OR
J. A. BURRAGE VK4UW
F. J. STARR VK4FS
C. A. IVES VK5AF
J. E. GODDARD VK6JG

Maritime Services

M. E. GUNTHER VK3NG

LET'S WE FORGET

REMEMBRANCE DAY CONTEST 1974

Please think of the Contest Manager thumbing through all the logs and racing to get results for the next AR, and help him a great deal by simply putting a FRONT SHEET on your log, be it ever so humble a log, and in large clear letters showing the CONTEST SECTION, your CALL SIGN, and your SCORE.

Of lesser importance at this time but important later on, is your address/name, and your comments.

You realise, of course, that logs need be sorted into call areas, as VK3, VK4, etc. and sections as phone, CW, open, VHF, SWL etc. . . by name or letter, and the score has to be listed.

Please forward your log as soon as possible. I wonder if you realise that contest logs must be in by September to be processed by the end of the month for November AR. From closing date to the end of September is the crucial time. If logs are early much of the work has been done before the closing date.

A little thoughtfulness on your part may enable the contest staff to have some peaceful meals.

Remember where the logs go this year?

Check your log for duplications . . . our most common fault . . . some contestants lost hundreds of points last year apparently not looking for duplications.

If you make a VHF intercall contact you may count as HF but can only make the one contact as in HF.

One contact per band for HF means just that . . . not one contact per band per mode.

Try and find time to exchange names . . . It helps make the contest really friendly. You can help make it a friendly contest other ways also.

VK4PJ tips that VK4 will be well to the fore this year with perhaps VK3 resting on their laurels. He would like to see the 800 log barrier beaten also.

1974 CQ WORLDWIDE CONTEST

Top scores

Single Op all band	Australia	Oceania	Score	QSO Pts
SV4VU	1,106,833	VK4VU	A	807,338 1437,228
LJ8HF	1,130,206	VK1AOP	A	50,572 197, 94
TE2CF	1,076,404	VK4PJ	A	4,672 65, 29
VK4VU	967,338	VK3BM	21	4,640 274, 40
		VK2APK	14	536,182 791, 238

For those interested in DXCC, note the number of prefixes that were contacted from VK land. Some hard work on one of these contest weekends would put one well on the way to the certificate.

ALL ASIAN THE NEW HORIZON

1000 GMT Saturday August 24th to 1000 GMT Sunday 25th August. The exchange is between Asia and the rest of the world, on all bands 1.8 through 28 MHz.

EXCHANGE. For OM sbs, RST plus age of op. For YLS, RST plus 00.

SCORING. One point per QSO. Use prefix of Asian countries (CQ WPX list) for multiplier. Final score is sum of QSO points from each band X the sum of multiplier on each band.

Log to J.A.R.L. Contest Committee, Box 377, Tokyo, Japan, by 30th Nov.

THE 14th SCANDINAVIAN ACTIVITY CONTEST 1974

CW: Sept. 14th (1500 GMT) to Sept. 15th 1800 GMT PHONE: Sept. 14th (1500 GMT) to Sept. 22nd 1800 GMT.

Non-Scandinavian call CQ SAG on CW & CQ Scandinavia on phone. 3.5 through 28 MHz. Separate logs required for CW/CW and phone/phone. Scandinavian prefixes are LA/LJ/LQ, JW, JX, OH, OH, OX, OY, OZ, SM/SK/SL, and OJO.

(a) Single op. (b) Multi op, single ix. (c) Multi op, multi tx (ALL Clubs). Class (c) separate serials for

each band. Usual RS, RST & 3 serials. One point per QSO. Multipliers . . . Max 10 per band, of prefixes above. LOGS to EDR Contest Committee, Box 336, Aalborg, Denmark. Post before Oct 15th.

ALL SAG participants are requested to confirm each QSO with QSL card.

CONTEST CALENDAR

Aug 10/11 Argentinian Phone Contest
Aug 10/11 European CW Contest
Aug 17/18 Remembrance Day Contest
Sept 2/25 All Asian CW Contest
Sept 14/15 European phone Contest
Sept 14/15 SAG CW Contest
Sept 21/22 SAG Phone Contest

THE 14th SCANDINAVIAN ACTIVITY CONTEST 1974

VK operators forwarded 33 logs for the phone section and 28 CW logs. Including the 3 check logs only 52 operators were involved. We should do a lot better in our only international contest, so how about marking your calendar for Oct 5/6 (phone) and Oct 12/13 (CW) this year, 1974.

COLOMBIAN INDEPENDENCE DAY CONTEST

The 1973 contest was won by UK5IAZ with 755.184 points. The World winner receives a sterling silver cup and sterling silver plaque awarded to each of the 6 continental winners. Only 1 entry was received from Oceania and ZM3NS won with 22,008. Eligible logs must contain at least 30 QSOs. You are too late now for 1974 but a future effort could be very worthwhile.

A.A.R.T.S. WORLD-WIDE RTTY CONTEST 1974

August 17th (0000-0000Z, 18.00-24.00Z) and 18th (08.00-18.00Z), all bands, 2-way RTTY, 4 classes exchange RST & QSO number. Logs to Carl, OZCC, Mønsengsgade 5, Randers, Denmark. Carl also sends a reminder about the W8RY RTTY Award Details available from AARTG.

1974 VK-ZL Oceania DX contest rules

NEART and WIA, the National Amateur Radio Associations in New Zealand and Australia, invite world-wide participation in this year's VK/ZL OCEANIA DX CONTEST.

OBJECTS:

For the world to contact VK/ZL/Oceania Stations and vice versa.

WEIGHT

Phone: 24 hours from 1000 GMT Saturday, 5 October to 1000 GMT Sunday 6 October.
CW: 24 hours from 1000 GMT Saturday 12 October to 1000 GMT Sunday, 13 October.

RULES:

1. There shall be three main sections to the contest—

- a. Transmitting phone.
 - b. Transmitting CW.
 - c. Receiving — "Phone & CW" combined.
2. The contest is open to all licensed transmitting stations in any part of the world. No prior entry need be made. Mobile Marine and other non-land based stations are permitted to enter their "country status" will be determined by the country which issued the call sign used in the contest.

3. All amateur frequency bands may be used but no crossband operation is permitted. NOTE: VK and ZL stations irrespective of their location DO NOT contact each other for contest purposes EXCEPT on 80 and 160 metres on which bands contacts between VK and ZL stations are encouraged.

4. Phone will be used during the first weekend and CW during the second weekend. Stations entering both sections must keep separate logs.

5. Only one contact on CW and one contact on Phone per band is permitted with any one station for scoring purposes.

6. Only one licensed amateur is permitted to operate any one station under the owner's call sign. Should two or more operate any particular station, each will be considered a competitor and must submit a separate log under his own call sign. This is not applicable to overseas competitors operating Club Stations.

7. Entrants must operate within the terms of IARU Rules.

8. CYPHERS: Before points can be claimed for a contact, serial numbers must be exchanged and acknowledged. The serial number of five or six figures will be made up of the RB (Phone) or RST (CW) report plus three figures which may begin with any number between 001 and 100 for the first contact and which will increase in value by one for each successive contact E.G. — If the number chosen for the first contact is 021, then the second must be 022 followed by 023, 024 etc. After reaching 999, restart from 001.

8. REWARDS:

(a) For Oceania Stations other than VK/ZL — 5 points for each contact on a specific band with VK/ZL stations; and 1 point for each contact on specific band with the rest of the world.

(b) For the Rest of the World other than VK/ZL — 2 points for each contact on a specific band with VK/ZL stations; and 1 point for each contact on a specific band with Oceania stations other than VK/ZL.

(c) For VK/ZL Stations — 5 points for each contact on a specific band and in addition, for each new country worked on that band, BONUS points on the following scale will be added — 1st contact — 50 points, 2nd contact — 40 points; 3rd contact — 30 points; 4th contact — 20 points; 5th contact — 10 points. NOTE: The ARRL country list will be used except that each call area of "VK/K", "JA", "UA" will count as "countries" for scoring purposes as indicated above.

(d) 80 Metre Section — For 80 metre contacts between VK and ZL stations, each VK/ZL call area will be considered a "scoring area" with contact points and bonus points to be counted as for DX contacts. N.B. Contacts between VK & ZL on 80 Metres.

(e) 100 metre Segment: For 100 metre contacts between VK/ZL, VK/VK, ZL/ZL and VK/ZL to the rest of the world. Each VK/ZL call area will be considered a "scoring area" with contact points and bonus points to be counted as for DX con-

You and DX

DX NOTES

From the log of Ken VK3AH, here are some unusual DX stations with their listed QSL managers. Should some amateur be experiencing difficulty in obtaining a QSL from a rare DXer, Ken may be able to offer some assistance if a S.A.E. is forwarded to him with details etc.

Ken's address as per 1973 call book is ok.

DL Station
HR18P
A38AF
GSL Information
Via W5FTW
Direct to P.O. Box 19, Venus,
Tonga.

VP1B
F0BD1
FK9BB
HR1JAG
Via W3PVC or G4RS
Via P.O. Box 928, Papeete, Tahiti
Via DJ82B
P.O. Box 372, Tegucigalpa,
Honduras

Q3VBN/MM
TG9G1
TG9KZ
TG9KV
OX5SE
c/- PO Box 762, Guatemala City
c/- PO Box 762, Guatemala City
c/- PO Box 762, Guatemala City
c/- Mr E. Stormo, 9870, Dundas,
Greenland

KL7MF
EAT7M
KABN
WS08UB
4036 Belchen Dr, Anchorage 99603
PO Box 1086, Seville
W7PHO
US Navy, PO Box 291, Omaha,
Nebraska, 68081

KU0ITU
KY9ITU
K91DU
KD1ITU
KP2ITU
K4ITU
K9ITU
KX4ITU
VR1AA
H1BLG
EAB8G
PY2CPK
PN1AZ
JH3TKM
JO1ACH
KK4DDT
HCVLW
V81AG
DT7TP
VS5LH
JA1WMS/JAB
KZ8BO

PO Box 88, Sento
W1RLY
PO Box 22, El Salvador
PO Box 2485, Manayara
JA3QZN
JA3QZN
PO Box 1948, Medellin
PO Box 5757, Guayaquil, Ecuador
Box 06/517, El Salvador
DL7MQ
Box 91 Kuala Beligit, Brunei
JAB8PN
Box 408, Albrook Air Force Base,
Canal Zone.

9G1DY
N. Price, c/- Barclays Bank
Ghana, PO Box 2940, Accra,
Ghana.
Box 881, Muscat, Sultanate of
Oman, Arabia.

A4XFF
SH4G
Dr K. Hick, Lagoona Rd, Lord
Howe Island, NSW 2888
WS1UJ
WSWV
Box 314 Bandung, Indonesia

36 Pleasant Street,
Ballarat 3350

36 Pleasant Street,
Ballarat 3350

36 Pleasant Street,
Ballarat 3350

36 Pleasant Street,
Ballarat 3350

36 Pleasant Street,
Ballarat 3350

36 Pleasant Street,
Ballarat 3350

36 Pleasant Street,
Ballarat 3350

I therefore desire to purchase a second-hand FTV-502 slipstream converter for 82 MHz and should like if someone has a 2 metre item with light-weight characteristics, then we will negotiate to buy or lease said items.

I have had no problems securing a back up receiver, but we will be relying on the FL50 as the sole generating source of SSB.

A carphone on 52.525 and 52.656 FM will provide an early warning system for 82 MHz I note with interest that 52.525 is a national calling frequency in the U.S.

Antennae at present appear to be identical to that used with success at Larnmouth during the Ross Hull.

One 7-element Yagi (heavens know how we will fix it in the hold of the aircraft),
 3 - 4 vertical for 52.525,
 4 - 4 vertical for 146 MHz FM,
 10 El Jeng Yagi 144 MHz SSB,
 12 - 4 12 Slot fed 432 MHz.
 Power on 8 & 2 will be only 100 watts PEP or so with the eye to reliability, not super-signals.

On 432 MHz a solid state line up will probably be left transmitting during operation on 6 metres, along with the same identifications, so if anyone hears us then come onto 6 metres. Frequency 432 MHz.

The next comment is a calling frequency and at the risk of being unpopular, I cannot see a valid reason to appear above 52.100 MHz, or 144.100 in the light of Geoff VK3AMK's comments re long distance DX.

Some of the blame for the non-2 way to SW1AR was due to locals chatting to me on .05 when the tape specifically said "CO DXI" Enough said. Please support this expedition because as a student, the 5500 I am spending will give me VK8 this season, not me. Operating times ZULAM (Norfolk Island has N.Z.S.T.) 1800Z onwards.

Any donation of an old QOE98/40, QOE03/12, etc. would be gratefully received with promise of return of items after 20. The basis here is for a reliable continued coverage of the VHF spectrum during the dx-pedition.

Any suggestions as to calling procedure, frequencies etc. would be gratefully received.

Yours faithfully,
 Stephen R. Gregory, VK3ZAZ or VK3ZWI

Hopefully callign will be VK8ZAZ or VK8ZWI

More details later.

The Editor,
 Dear Sir,

I would like to make a few comments after reading the letter by Cyril Maude VK3ZCK in June 1974 AR.

Cyril seems to be rather scornful of those amateurs who will not or cannot design and build their own equipment. I think I can understand his viewpoint, he is apparently young and has had the benefit of modern education, also he is not interested in DX or in CW, this I deduce from his callign.

Now in my case, I obtained my licence in 1932, so you can make an educated guess as to my age. When I started the amateur game it was still in the "depression days", transmitting gear was just about unobtainable or priced out of our reach, so we built everything from the power transformer to the final tank coil and aerial, using mainly receiving type components and valves, very often second hand. I was just one, there were hundreds of us doing the same.

Cyril, you are young and keen and apparently capable of designing and building high frequency equipment, this is good, but please remember that this is only one phase of an activity that has many branches. Your licence and the frequencies you operate on confine you to comparatively short range QSOs, a lot of amateurs are interested in this, but there are a awful lot who are not. I spend a lot of time on the 14 MHz band, also the 21 and 26 MHz bands when they are open, and the number of stations all over the world who claim to use "home brew" gear, some somewhere round about 1 per cent or less at a guess. The biggest average of "home brew" gear would probably be among the Russians, although most of them do not say what they are using.

I see writing from the angle of the "Old Timer", we have had our share of improving with what was available and we managed to keep amateur radio going, mainly with the help of the U.S. amateurs and the A.R.R.L., without their

numerical strength, amateur radio would probably not now be as extensive.

Amateur radio is a rewarding hobby, UHF is only one small part of it, and although the technical side of it is important, the wonderful feeling of comradeship and goodwill that is evident on the DX bands is probably the most important aspect of amateur radio. I have had QSOs with almost 200 countries, covering all shades of political philosophy, but every contact has been friendly and pleasant, surely this must mean something, if there was more of it, the world would be a better place to live in.

So keep it up, you younger members of the amateur fraternity, design and build your own gear, this is as it should be, and there will always be a place for you in the amateur game, but perhaps as you get older you will tire of this side of it, take out a full licence and get into the DX side of it.

You have only to hear the terrific "dog pile" on a rare bit of DX to realise how many amateurs all over the world are interested in this side of amateur radio. I have had contacts with men and women of all walks of life, from Chief Justices, Computer designers, Electrical and Radio Engineers to what I would call professional people, covering every occupation there is, doesn't this mean something.

There is still a place, and a big one, for the operators of "black boxes" (most of which are grey, not black) in this great hobby of ours.

73,
 Gordon Reed, VK9OW

WHAT'S AROUND THE CORNER IN A.R.

Following our appeals for articles it is pleasing to report that a number of articles (technical, non-technical and humorous) are now at various stages of preparation for publication.

Title	Author
A Translated RX for Top Band VK3ANY FT200 for AM Use	VK3ASV
A Digital Readout for Transceivers VK3AOH	VK3AOH
A Monitor Scope	VK5YH
Long Wire Antenna Tuning and Matching Unit	VK8DX
Some Thoughts on Speech Processing	VK3AVO
Modifications to the Trio JR60 Receiver	VK3AGJ
Modifying the TCA875 and 1877 for use on 8 & 2 metre FM nets	VK3ACM
A Keyer for VK3RTQ	Roly Roper
Modifications to Vinten MTR15 for 53.032 A.M. Net	VK3AOM
Modifications to Vinten MTR12 for 52.525 FM Net	VK3ACM
Experimenter's Delight (Power Supply)	VK3ZIE
Microstrip Data Curves	VK3TB
The Shikoku	VK3G
Florida Country Expedition ZL4JP via VK4LZ	VK4LZ
FT101 Vox Hints	VK2EP via VK4LZ
Meds to Radio Receiver R380	
A/RUP (Part 3)	VK3ZRV
Ground Plane for 2 Metres	VK3AQO
VHF — UHF Advisory Committee — 70 cm Draft Band Plan	VK3ZJC
Simple Pulse Position Modulation System	VK4ZFD
Re-Vamping a VTYM	VK3ARZ
Multi Output Indicator	VK4UJ
EMP — The Ultimate EMC Problem	VK3CDR
20MHz Qud Tuning Made Simpler	VK2QG
The "Paastest" Communicating Calculator (Humorous)	VK3AOH
Modification to the FT200	VK3JMP
Antenna Measurements	W2IMU
(Reprint from 4th Tick, VHFer)	
Soldering for Electronics	VK3AOH
(Reprint from Zero Beat)	
A Sheet Metal Bender	
(Reprint from Zero Beat)	
What to do with that old receiver	Harry Roach
(Reprint from Zero Beat)	

Letters to the Editor

With opinion expressed under this heading by the individual opinion of the writer, it does not necessarily coincide with that of the Publishers.

The Editor,
 Dear Sir:

I am writing in reference to the Norfolk Island VHF DX-Pedition planned for the end of this year.

Subject to PMG approval, the station should be on the air from 16th December 1974 to 20th January 1975, using 52.144 and 432 MHz.

At this stage one system of equipment is ready for use, however on receipt of the cargo charges from the private airlines serving the island, we would like to somehow cut down on weight.

SIDEBAND ELECTRONICS SALES and ENGINEERING

YAESU MUSEN TRANSCEIVERS

All in short supply, 50% deposit with orders, average delay in delivery 6 to 8 weeks.

FT 101 B AC/DC 160 to 10 M and fan	\$525
FT/PP 200 combination	\$375
Spectronics DD-1 counter for 101/401	\$150
FT DX 400/560 noise blankers,	\$30
FT 101/101B/560 CW filters	\$30

BARLOW-WADLEY RECEIVERS

Model XCR-30 Mk II 500 kHz to 31 MHz continuous coverage, crystal controlled reception of AM/USB/LSB

\$225

HY-GAIN ANTENNAS

14 AVQ 10-40 M vertical 19 in. tall	\$50
18 AVT/WB 10-80 M vertical 23 in. tall no guys	\$70
TH3JR 10-15-20 M Junior 3 el. Yagi	\$160
TH6DX 10-15-20 M senior 3 el. Yagi	\$175
204BA 20 M monoband 4 el. full size Yagi	\$150
DB 10-15 10-15 M 3 el. Yagi ideal for use over 204 BA	\$110
Magnetic base mobile whip 106 MHz up with 18' RG-58U cable and coax plug	\$18

ANTENNA ROTATORS

CDR 22-R	\$45
New HAM-2 with new control box, separate brake and rotate controls	\$135

NOISE BRIDGES

Omega TE 01 up to 100MHz

\$25

EGG INSULATORS the old style porcelain eggs, a dozen for

\$1.00

POWER OUTPUT METERS

Galaxy RF-550A with 6 pos. coax switch	\$75
Swan WM-1500 4 metering ranges 5-1500 W	\$80

144-148MHz Two Metre Equipment

KEN PRODUCTS

KP-202 hand-held 2 W output transceivers, now with 4 Australian channels, choice out of 40 & 50 plus two of 42, 44, 46 & 48

\$150

KCP-2 NICAD battery chargers & 10 NICAD batteries

\$35

Genuine leather carrying case for KP-202

\$8

KLM ELECTRONICS

Solid state 12V DC amplifier, 12 W output, ideal with KP-202 & Automatic antenna change-over switching

\$50

RELCOM LINE 2

20W PEP SSB 12V DC solid state transceiver

\$250

YAGI ANTENNAS 9 element 10 ft. boom, with gamma match coax feed

\$30

POWER SUPPLIES, 240V AC to 12V DC 3 to 3.5 Amps, regulated

\$30

ELECTRONIC KEYS Katsumi model EK 105 A 230V AC with key paddle

\$35

CRYSTAL FILTERS 9 MHz similar to the FT 200 ones, with carrier crystals

\$30

27 MHz NOVICE LICENCE & CITIZEN-BAND EQUIPMENT

MIDLAND

5 Watt AM 23 channels, 12V DC transceiver, all crystals included, with PTT microphones

\$95

PONY

5 Watt AM model CB-76, identical to the Midland CB-76

\$95

CB-74 5 Watt AM with 27.880 crystals, for fishermen

\$80

SIDEBAND NC-310 one Watt hand-held 3-channel transceivers

\$50

SIDEBAND NC-501 SSB /AM 23 channel 15W PEP transceivers, soon here

\$175

MIDLANDS PRODUCTS SWR-Meters \$12 & \$18
PTT dynamic microphone \$10

LOW PASS TVI FILTERS, cut-off frequency 35 MHz
6 sections filter \$18

All prices quoted are net, cash with orders, sales tax included in all cases, subject to changes without prior notice. No terms nor credit nor COD, only cash and carry. Government & Public Company orders included. Include 50 cents per \$100 value for all-risk insurance, freight, postage and carriage are all extras. MARY & ARIE BLES, Proprietors.

SIDEBAND ELECTRONICS SALES and ENGINEERING

P.O. BOX 23, SPRINGWOOD, N.S.W Post Code 2777

TELEPHONE (STD 0471) 51-1394

COPAL-CASLON 24-HOUR DIGITAL ELECTRIC CLOCKS

CLEARLY VISIBLE FIGURES
INSTANT READABILITY, ACCURATE



Model 601, A.C., The Popular One

A unique desk/table calendar model, combining utility and beauty, receiving the Mainichi Industries Design Award Japan. Digital flip cards advance date, day, hour and minute automatically. Anodized aluminum case houses built-in neon lamp, 230V, 50 Hz. A.C. Cord and plug attached.

Price \$27.90

Model 703 A.C. with Alarm

A desk/table clock of modern design, Luminex, Avocado Green. Built-in neon lamp, 230V, 50Hz A.C. Cord and plug attached.

Price \$17.90

Model T-11, Battery

New Model, BATTERY POWERED, with alarm. Tuning fork controlled.

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A "large" Wall Clock—
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A.A.T.G. issue the quarterly magazine 'KEYBAUD' for RTTY enthusiasts

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INTERSTATE AGENTS:

Sydney: PARIS RADIO ELECTRONICS, 7a Burton Street, Darlinghurst, N.S.W.
2010, Phone: 31-3273.
Perth: W. J. MONCRIEFF PTY. LTD., 176 Wittenoon Street, East Perth,
6000, Phone: 25-5722, 25-5902.
Brisbane: FRED HOE & SONS PTY. LTD., 246 Evans Road, Salisbury North,
4107, Phone: 47-4311.
Adelaide: ROGERS ELECTRONICS, P.O. Box 3, Modbury North, S. A.
5092. Phone: 64-3296.



The striking new control box brings operational ease and reliability to antenna rotation. Styled to compliment surrounding communications equipment the CD44 provides all operator controls on the front panel, making access to the back of the box unnecessary. Front panel calibration assures maximum accuracy with minimum effort. The separate off/on switch offers continuous directional indication on the illuminated meter. The lifetime of the control is enhanced by the addition of individual snap action switches for clockwise/counter-clockwise rotation. Finished in tan and brown with a brushed gold anodized front panel, the CD44 will be a welcome addition to any communications center.

Size: 8-1/8" W X 8-1/4" D X 4-1/8" H.

HAM II The rotor continues the tradition of the heavy duty cast aluminum bell-housing, long the trademark of Cornell-Dubilier Electronics' amateur rotors. The inline construction evenly supports the load on two six inch races containing 98 precision ball bearings. An electrically controlled wedge brake is housed in the base, positively locking the rotor in any of 96 segments spaced 3° 45' apart. The high torque motor drives the unit through a machined stainless steel gear and pinion assembly, rotating a full 360 degrees in less than 60 seconds. Designed for antennas of up to 7.0 sq. ft. of wind load area, the rotor promises years of trouble free operation. The rotor accepts masts from 1-3/8" to 2-1/16".

SPECIFICATIONS

INPUT VOLTAGE, STANDARD MODEL: 220 VAC, 50-60 HZ.
TURNING TORQUE: 800 IN.LBS.
BRAKE TORQUE: 2500 IN.LBS.
SIDE THRUST CAPACITY: 5500 IN.LBS.
CABLE: 8 WIRE (Belden 8448 or EQUIVALENT UP TO 150 FT.)
SHIPPING WT.: 29 LBS.



CD44



Although similar in appearance to the TV bell housing rotors, the CD44 rotor has over four times as many precision ball bearings in the dual 6" diameter race to provide additional load capacity for medium sized communications antennas. The high torque motor drives the unit through a machined stainless steel gear and pinion assembly, rotating a full 360° in less than 60 seconds. When used with antennas of not over 2.5 sq. ft. wind load, a built in brake on the motor prevents windmilling. Accepting masts from 1-3/8" to 2-1/16", the CD44 promises years of trouble free operation.

SPECIFICATIONS

INPUT VOLTAGE, STANDARD MODEL: 220 VAC, 50-60 HZ.
TURNING TORQUE: 800 IN.LBS.
BRAKE TORQUE: 2500 IN.LBS.
SIDE THRUST CAPACITY: 5500 IN.LBS.
CABLE: 8 WIRE (Belden 8448 or EQUIVALENT UP TO 150 FT.)



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Educator! Educator! Educator! is a catchphrase which wins votes and increases taxation. Within recent months YRCS has been deluged with statements concerning our own programme of education, using the term "professionals". Even the Federal Co-ordinator has been charged with having had "no experience in the educational field". Obviously the pieces of framed parchment on the walls of my study indicating *Vilse Studiosa Operoseque* Lauree, backed by 38 years of teaching seem to have no value to those who assume that the only "professionals" are located in High Schools, Colleges and Universities.

YRCS needs both the "professionals" and the ordinary individuals, many of whom are our instructors, and they teach! In my report to the Eastern WIA Federal Convention, I stated my doubts concerning unreserved endorsement on statistics; this has been confirmed by a message received to the effect that the University of NSW Radio Club has been notified of 16 successful ACPG (and/or ACLCP) candidates at the February PMG examination. Congratulations to this YRCS club, and thank you for negating the opinion that YRCS in NSW is on the decline.

Information has come to hand that the IEEE pensants for 1973 in Victoria have been awarded to the Central Gippsland Youth Radio Club and the St. Johns College Radio Club. We commend both clubs on having achieved success in this direction.

Supervisors are requested to ascertain whether your state has a constitution for YRCS, as this matter will be mentioned during the August conference at Milland.

Book Review

ARRL THE RADIO AMATEUR'S HANDBOOK,

51st Edition, 1974

The 51st edition of the Handbook that I bought was in 1971. I bought it then because I felt there was sufficient new material in it to make my '83 copy obsolete. I am going to buy the '74 Handbook for the same reason.

Amateur Radio, like all other fields, is now suffering from "Future Shock" too much is happening to one person to keep up with.

As various new techniques have been applied to Amateur Radio, so the Handbook has expended its coverage to include them. The result of this may be seen in the contrast between the '48 Handbook, which contained a smattering of theory and a lot of constructional projects, and the '74 Handbook with only enough constructional projects to give examples of the techniques in action. There is a leaning towards telling the reader how to design his or her own receiver, VFO etc., rather than a nut and bolt description of how to build one.

Transmitters have displaced valves to a large extent, and ICs are also included in many projects (even the humble code practice oscillator). While much time is spent on explaining the finer points of mixer design or methods of reducing front and noise, ICs are regarded as black boxes (connect antenna to pin 1, battery to pin 2, loud speaker to pin 3 and Bingle instant receiver). Few internal circuits are given and almost no information on methods of operation.

The emphasis throughout is on the practical and it is of credit to the original author(s) of the chapter on electrical laws that this section remains substantially unchanged.

The Handbook has been described as the "Bible of Amateur Radio" and every Amateur or prospective Amateur should have a copy. If your copy is more than a few years old, it might be a wise idea to invest in a new copy.

As the Amateur borrows from the other fields of electronics, so the pressure to include more and more of them is going up. It is going to be the editors' job more difficult and it will be interesting to see how they cope. Copies are available from the WIA and are a good buy at \$5.50.

Hamads

FOR SALE

Rx: Manual CR160, 2-30 MHz, complete with P/S and Handbook, in good working cond., \$85. Rx: Edvyness 778R, 18-165 MHz, in good working cond., \$85. VK6ZAL, QTHR. (02) 45 3232.

Teletypewriter, Creed Model 7C, in good working order, \$60. VK6ZAL, QTHR.

FTD3485-PV408 VFO, CW filter, 100 m rec. 4-6 KHz spare valves. Carl, cheque or m.s. \$475, fghi. extra. 324 858/AM/CW/PM exciter 160-10 m \$125. VK6ZJZ, Unit 32, Harbour Heights, East Fremantle, W.A. 6158.

Self Supporting Steel Tower (4 legs) and Ladder, excellent condition. Ring (02) 807-9108 — after 6 pm for full details. VK5ZSK.

Swan 900CX Transceiver W/VOX & A.C. supply. F.L. 2008 Linear, mint condition. Ph.: (03) 24 1231, A.H. 20 6135.

1 AWA MRAA, 5 channels with A.S.A., \$90.00. 1 H/S Pie Ranger, unconverted, \$20.00. 1 STC L/S Generator on 5 m with xtal, \$20.00. 1 AWA 8 W80 going on 2 metres, less xtal, \$25.00. P.r.: (03) 92 5667 between 7 and 6 p.m. only.

Communications Rx. Trio 8R 580S, brand new xtal calibrator V.R. speaker and aerial connector, \$140.00. VK2AHR, QTHR. Ph.: (02) 807 6782.

Teletypewriter on matching metal table, VGC, \$85. Teletype character and distortion test generator, \$30. Command Tx 4 to 5.5 MHz, \$10. 3 CW microphone equipment including two diodes, signal generator with cavity wavemeter and bolometer bridge, four klystrons and large quantity of plumbing, \$35. VK3ZAO, QTHR. (03) 96 4292.

National HRO hotly up as per RSGB modifications, complete with mechanical filter all coils fully hand-spread for all bands. As new appearance, Ecoston Electronics, 146a Goham Road, Kew, Vic. 3101.

Tri-TS-18 with power supply and accessories, in perfect order, demonstration given, \$250. Contact Rob Duvey (VKAFM), The Chalet, Mapleton, Qld., 4500.

Pulse VTYM \$30.00. 3 inch CRO \$20.00. MR16 \$25-325 \$35.00. MR28A 145M/C \$80.00. ATY or 432 M/CAM TX with p/supply \$80.00. Sub-Carrier Generator \$20.00. 35 EL 432 M/C Antenna \$20.00. 2 145 Fibre Glass Whip, base loaded \$10.00 ea. VK2AJY/T, QTHR.

Rx General Coverage 0.5 to 30 MHz, AF, IF and tuneable 1 F of 3-5 MHz (from EA240), built from commercial kit with printed/engraved front panel in matching metal cabinet with speaker. Front end is major difference to original giving high selectivity/gain and is crystal loaded [circuit available]. Parts cost approx. \$300 and set has 26 transistors. Best offer, VKAXT, QTHR.

Heathkit HW-7 Transceiver with matching PS and imported Coder PR40 Receiver preselector, all commercially built, as new cond. \$120. VK6JF, QTHR or Kelgoorlie 212211.

TR 4 Transceiver with AG ps in excellent condition with spare set of finals and other valves for unit, \$375. ONO. VK2AGQ, QTHR. Ph.: (02) 45 2427.

Pw Mx II 53.895 Tx Rx, \$20. 644 Pw Mx IIIA Rx Tx, modified to DSB, \$30. 6 Mx IIIA Tx Rx, \$20. 2L 2 Mx, cond. 32 MHz IF, \$20. Incomplete MR16C coband, \$10. Type Y Power Supply 5.3 UAC 250 UDC, \$20. In. Oscilloscope, working order, homebrew, \$15. VK2ZBC, QTHR. UH.: (02) 85-3324.

Drals SPR-4 Receiver, almost new. \$475. Also AR 6 Receiver/AT 6 Transmitter, Aerial Tuning unit and generator set, \$350. 6 Mx IIIA Tx Receivers AWA. One VHF, one HF, fixed frequency, \$35 each. Contact John Z. 11/38 Bennett St., Bondi 2026 NSW. Ph.: (02) 387-1078.

Superior VHF QTH C/W House, Shack and Workshop also XYL, silent Lenns 12 km South of Adelaide. Available (also Homebrew), Enquiries VK5ZWW Box 1117, Orange 2800.

Rx AR6A, in working order. Copy of Handbook available, \$80 ONO. VK6HE, QTHR.

\$830w standard receiver, 3.5 to 30 MHz, complete with SSB, CW, and A.M. crystal filter, excellent condition, \$235. Stable antenna rotor, excellent condition, 45 feet of control cable, new ruggedised drive shaft, \$35. VK3OM, QTHR. (03) 560 9215.

2 AWA MRAA FM carphones, 1 converted to 2 m FM, 6 channels, xtal for Repeaters CH 1 and CH 4, simplex ch 40 and ch 50. The other used for spare parts (mic. included, unconverted, all components O.K.). Both units to be sold separately for \$125.00. 9. Bathols, VK3UV, 3 Connewarre Ave. Aspendale, 3195 (03) 90-424 (evenings).

WANTED

HW 32 or QA/AXY III, PPS, VK2AJY/T, QTHR. PPS transceiver and DC 75 mobile power supply. Will pay cash or exchange for above mentioned receiver for sale. VKAXT QTHR, or write PO Box 496, Dalby, Qld., 4405.

KEN 2 meter hand held FM transceiver. VKAXT, QTHR, or write PO Box 486, Dalby, Qld., 4405.

Circuit Diagrams and tuning data on ATRAC RAAP transceiver and also power supply K1 to suit ATRAC. Contact Col Paton, 2 Premier St., Maryborough, Qld., 4650.

Circuit or Handbook for Hallicrafters S27 to buy, borrow or copy. VKAXT, QTHR.

Circuit Diagram or related material for APX-5. Can copy, return of originals guaranteed if requested. VK3XTX, QTHR.

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The following were reported as stolen from the Agis P/L factory in Thornbury, Vic., on 30th May:

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and 2 calculators. If whereabouts are known please contact Victoria CIB.

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